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ABSTRACT

This book and video are based on a symposium on ways to foster giftedness in children in kindergarten through third grade. Emphasized throughout are DISCOVER projects, federally funded research and development projects to assist Arizona educators in identifying and planning programs for gifted children from diverse cultural, ethnic, and linguistic backgrounds. Chapter 1 profiles model DISCOVER classrooms, young gifted learners, and their teachers. A list of materials for a multiple intelligences learning center is provided. Chapter 2 explains the multiple intelligences model of giftedness and the DISCOVER program. Chapter 3 explains 20 developmentally appropriate practices, including: age-appropriate practices; individually appropriate curriculum; acceptance of diversity; humane, supportive, flexible, and responsive environments; a whole child perspective; active, interactive learning; learner-centered, teacher-facilitated curriculum; integrated curriculum; challenging learning activities and experiences; extensive planning; intrinsic motivation; supportive guidance and discipline; authentic assessment; community-based programs; parent involvement; and collaboration. The S. W. Schiever and C. J. Maker Continuum of Problem Types is presented and applied to the study of cycles in seasons and weather. Appendices provide: a list of symposium participants, a transcipt of the symposium video, and abstracts of DISCOVER projects. The video shows symposium participants addressing issues of talent identification, teacher preparation, and curriculum. Ways that young children who are gifted or talented can be nurtured at school and at home are demonstrated. (Contains 32 references.) (CR)

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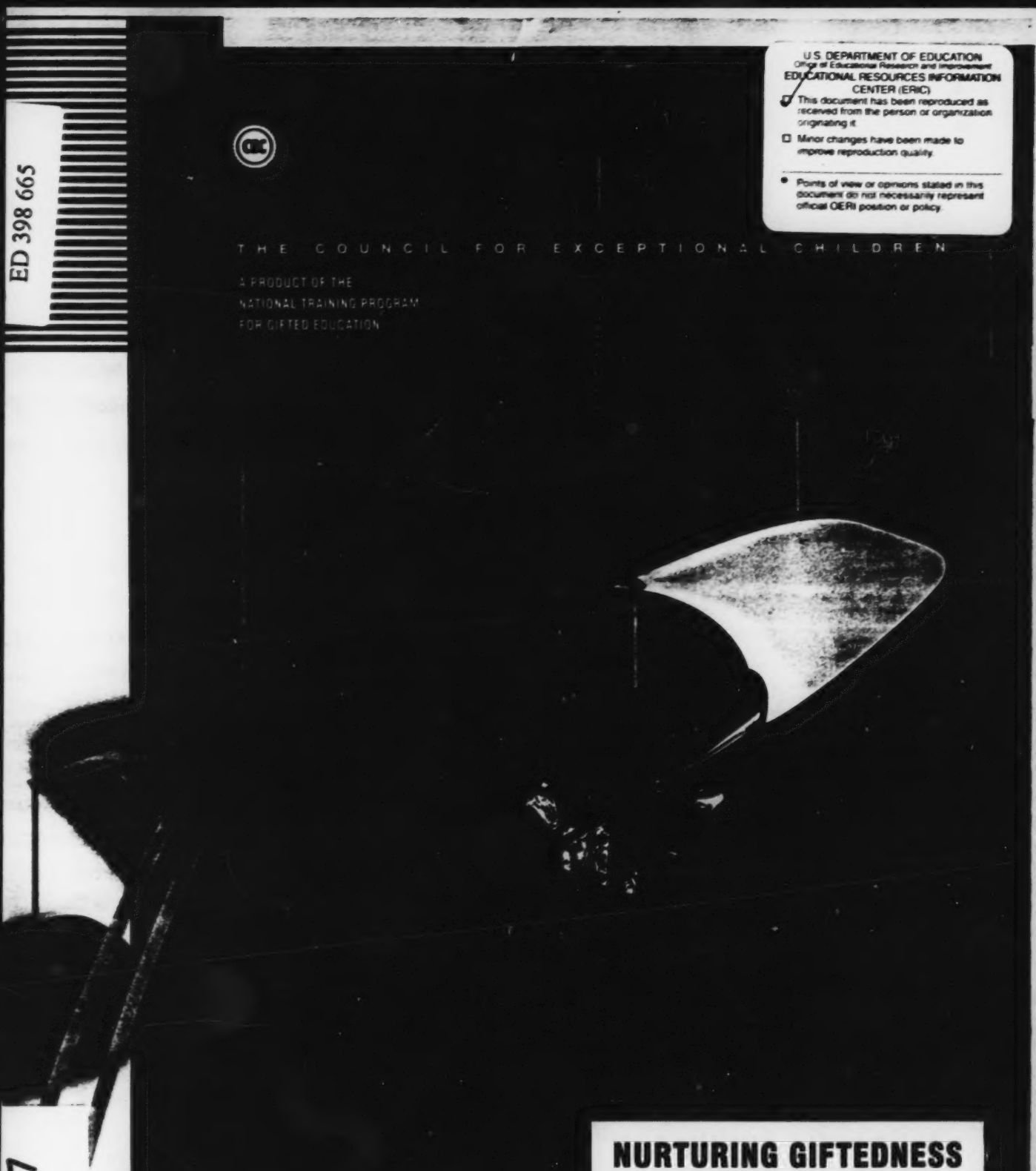

NURTURING GIFTEDNESS IN YOUNG CHILDREN

C. June Maker
Margaret A. King

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The Council for Exceptional Children (CEC) is the largest professional organization internationally committed to improving educational outcomes for individuals with exceptionalities. CEC accomplishes its worldwide mission on behalf of educators and others working with children with exceptionalities by advocating for appropriate government policies; setting professional standards; providing continuing professional development; and assisting professionals to obtain conditions and resources necessary for effective professional practice.

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C. June Maker
Margaret A. King

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Preface

This book is about children and classrooms—real children and real classrooms. It is about how to create classrooms that are humane, nurturing, and exciting—classrooms that enable and encourage the unfolding of giftedness in young children. It is not written as a scholarly treatise on education, but as a real and practical sharing process both between us and from us to you. Throughout our careers as educators, we have been struck by the powerful impact that people's stories can have on their thinking and practice. We want to share some of our stories about children and classrooms and encourage you to share yours with us and with your colleagues.

At various points throughout the telling of our stories, we will stop the narrative and reflect on the principles and underlying beliefs that are brought to light. These principles and beliefs come from two fields: early childhood education and education of the gifted. Some educators in both fields have perceived the principles as incompatible with or in opposition to one another. However, as we listened to each other and to the other participants in the Symposium on Nurturing Giftedness in Young Children sponsored by The Council for Exceptional Children, we were struck by the similarities in our beliefs and in our interpretations of the principles and practices in our respective fields. A list of Symposium participants can be found in Appendix A. A videotape transcript reflecting the ideas of Symposium participants can be found in Appendix B.

To help you resolve any inconsistencies you may see and to construct your own interpretations of our stories and yours, we will ask you to reflect on your beliefs and identify principles and practices you think are important. Through these reflections, we intend to reach understandings about practices that are developmentally appropriate in the education of young children—practices that encourage and enable growth, but do not force children to try to be who they are not.

We will not neglect the ideas and research of others, for this also is important in gaining understandings about the appropriateness of practices and the nature of children and their development. Ideas from participants in the symposium and two institutes sponsored by The Council for Exceptional Children will be a part of our discussions, for it was out of these meetings that our ability to collaborate unfolded and grew. However, this book should be viewed not as a review of research or a presentation of the principles agreed upon by a group of educators, but as a selected presentation of ideas and some of the most relevant research related to the practices we are describing.

Finally, and certainly not least important, are the visual images. To add richness and depth to the text, we will include images of the children and the classrooms as seen through the eyes of a photographer (June Maker) and a visual artist (Darrell Anderson). To protect the children and the classrooms, we have changed some of their names and locations without losing the essence and truth of the stories. Enjoy!

CHAPTER 1

The Classrooms and the Children

KINDERGARTEN

The Classroom and Teachers: Ruth and Maribel

When you walk into Ruth's and Maribel's classroom, you feel the excitement. Moving, talking, laughing, exploring, and learning, children are totally engaged in problem solving. They choose freely from a wide range of materials and activities. Some of the choices are changed daily, some weekly, some monthly, and others are always available. When the children arrive in the morning, they have a group activity involving music or movement and are introduced to a new concept or idea. They then find out what centers are open and hear about any special activities that have been arranged. For the next several hours, they choose from the wide array of learning experiences available and participate in any special opportunities. At the end of the day, they have another group activity, again involving music, movement, or reinforcement of a concept.

The classroom is bilingual, since some of the children come to school speaking only Spanish, some are bilingual in English and Spanish, some are monolingual speakers of English, and occasionally a child enters the class who speaks only a language other than English or Spanish. Maribel speaks Spanish during instruction and in most of her interactions with the children, and Ruth speaks English. The teachers alternate as leaders of the morning and afternoon activities, so the children participate in bilingual experiences regardless of their dominant language. Each center is labeled in both Spanish and English, and materials such as books, books on tape, and songs on tape are available in both English and Spanish.

Parents and members of the community feel welcome in this warm, inviting classroom. Parents share their hobbies, collections, and occupations with the children. Recently, an artist showed slides and demonstrated his art, a parent shared his collection of banks, and a musician played guitar for the children. A coatrack with bags full of materials and instructions (in both Spanish and English) for doing simple but interesting learning activities is near the door of the classroom. Parents and children may choose a bag at the end of the day to take home, and they do so frequently. A check-out sheet is near the coatrack, so the teachers can have a record of which children have participated in each activity and who has the bags.

Themes such as patterns, relationships, and environments provide central ideas for organizing activities and designing centers that change. The teachers often bring special things from home that they know are interesting to the children. One week, for example, the classroom was filled with cowboy hats, boots, spurs, ropes, and other real objects related to the upcoming rodeo. The center of attraction was a saddle on a wooden horse. Boys and girls alike were dressing up, riding the horse, and practicing throwing their "lassos." The teachers used this opportunity to teach children how to mount the horse, hold a rope, and ride like a cowboy. Using the theme of environments, they were invited to explore the ranch, both past and present, as an environment that is familiar in the West but unfamiliar to these children who live in the city. In this classroom, learning is concrete, real, and experiential.

In the exploratory centers, many levels of complexity are included in both the materials available and the problem-solving activities the teachers have designed. In the math center, for example, pattern blocks, attribute blocks, tangrams, and snap cubes are always available. Also easily accessible are varied levels of puzzles or patterns that can be made with the materials.

The teachers observe the students' play at the centers, noticing when more difficult puzzles need to be provided and more complex activities designed so that all children are challenged. In the music center, for instance, the teachers noticed that some children had made the connection between letters and colors on the Chimalong keys (an instrument similar to a xylophone) and a music book and were playing simple melodies. Ruth and Maribel then introduced music for the Music Maker that helped the children continue these connections on another instrument.

The Children

Carlos. When Carlos came to school, he spoke only Spanish. The first day, after the children were introduced to the class, he went straight to the puzzle rack, took puzzle number 1, turned it face down to get the pieces out, turned each piece over systematically, and then put the pieces in their places. He replaced the first puzzle, took down the second, and followed the same systematic process until he had solved it. He continued until he had worked all 14 puzzles regardless of their difficulty, and was getting ready for another round 40 minutes later, when the teachers announced snack time.

The next day, Carlos started building at the block center. He quickly and purposefully chose his pieces and built a structure that was a complex

combination of symmetry and asymmetry, with pieces balanced carefully on narrow pedestals. He moved around the blocks with confidence and did not knock over a single piece. His concentration was amazing, as was his attention span. He spent an hour and half on this structure.

That same day, the teachers also realized that Carlos had exceptionally advanced language skills, as he read several books in Spanish and explained complex concepts using sophisticated vocabulary.

Crystal. Crystal is a unique individual. She has an incredibly strong sense of self. Some might call her stubborn. She certainly is a nonconformist, and she is not willing to be bored in a classroom. If there is no excitement, she creates her own. Crystal does not participate in groups very well, so she often engages in other activities while the other students are sitting or listening quietly. However, looks are deceiving. She hears every word and learns from it. During a group lesson on more/most (e.g., big, bigger, biggest; red, redder, reddest) and less/least (e.g., small, smaller, smallest), one day we heard the correct answers to all the questions coming from one of the far corners of the room. We looked, and there was Crystal, working a puzzle and answering the questions she heard from across the room.

Crystal enjoys the computers and knows how to use all the software in the classroom. If an adult asks her a question about what she is doing, she offers her seat and proceeds to teach the whole process! One visitor who was taught how to use the drawing program became so fascinated that she went out and purchased the software to use in her own computer. When Crystal was assessed on a problem-solving task involving logical-mathematical intelligence (Gardner, 1983), she made a "train" of attribute blocks with repeating patterns that was about 5 feet in length. The observer, who has conducted many of these assessments, believes that Crystal's analytical abilities are far beyond those of any other children she has tested using this activity.

Crystal also loves books, reading, and writing. Using the pattern of "This little piggy went to market," she recently wrote her own story, complete with illustrations, that ended with "This little piggy had a big, fat tummy." She is playful with concepts and ideas, seemingly thinking ahead of the teachers and surprising them with her humor and knowledge.

SECOND GRADE

The Classroom and Teacher: Gail

When visitors walk into Gail's classroom, the children hardly seem to notice at first, they are so busy with what they are doing. If you stay long, however, they will start coming by to show you a story, ask your name, or tell you which of the many products displayed on the walls are theirs. They will ask you to read their stories and tell them how to improve their writing. You may even be asked to contribute to a group activity.

A combination of small-group, large-group, and individual activities are planned, both by the children and the teacher. Large-group instruction is used for introducing concepts the teacher knows are new to all the children and for sharing student products and the results of learning. Music and movement experiences often are enjoyed in these whole-class settings. Class meetings and other community-building activities are conducted with the whole group present.

Small groups are sometimes student selected and sometimes teacher selected. For example, children have been assigned to math and reading groups based on their levels of skill development. However, when they work on projects related to a theme or on self-selected content, they work with those who have similar interests or with children they enjoy being with.

Individual choice and exploration are important elements of Gail's classroom. The environment is set up to facilitate varied grouping

arrangements and to encourage and engage children in their individual explorations. Learning centers are set up all around the walls of the room, desks and tables are in groups so that four to six children can work together, and a large space in the front of the room is used for large-group activities. In the centers are many varied, multileveled materials that can be used freely by the children. The materials are considered the essential "tools" of multiple intelligences (Gardner, 1983) that need to be available to young children. Figure 1 lists some of these essential tools.

Like Ruth and Maribel, Gail uses abstract themes to organize the curriculum. In the past 2 years, she has engaged the children in studies of cycles, systems, and structures. Within these broad themes, students have a range of choices; they can choose cycles or aspects of cycles that interest them. For example, children who are interested in the natural environment might investigate seasonal cycles; the growth of butterflies and tadpoles; or the cycle of birth, childhood, adolescence, young adulthood, maturity, old age, and death in humans or animals. Children who are interested in social phenomena might investigate historical or psychological cycles, and those who are interested in mechanics might want to learn about the cycles of gasoline and steam engines or the movement of electrical energy through appliances.

Children also make individual choices in the ways they study various cycles. Some might choose to read books or listen to people talk about their topic. Others might want to watch videos, look at pictures, and study diagrams. Some may want to interview people or observe carefully. Some may be quiet and still while they study, while others may be constantly on the move. Some children might want to listen to sounds and music to enhance their learning.

Choices also are important in the sharing of learning. Not all students in Gail's class are expected to write or give a report. Some do choose to write or tell their classmates what they have learned. They may do so in either Spanish or English, even though the teacher is not bilingual.[1] Some choose to share their ideas through paintings, drawings, claywork, and other visual art. Others produce diagrams, charts, and graphs. Some make up songs and musical productions, some produce plays or dramatic interpretations of their readings, and some make up dances. Models, dioramas, puppet plays, and combined formats are encouraged in the classroom.

Assessment of the children's learning is an integral and important part of the process. Products of learning are audiotaped, videotaped, photographed, or photocopied if not kept in their original form. Sometimes the children present their works in progress to the class so they can receive feedback to improve them before presenting the final results. The teacher structures this when necessary so that children do not forget to include positive comments along with their suggestions for improvement. Self-evaluation is always a part of the assessment. Expression of both positive elements and needed improvements is encouraged.

Cumulative assessment is the responsibility of both the students and the teacher. Each student has a working file in which products are kept. At various times during the year, products are selected and placed in the student's portfolio, which

FIGURE 1
Multiple Intelligences Learning Center Materials

Linguistic
Picture books
Books in two languages
Books written by children
Puppets
Cards with pictures and words
Books on tapes or records
Wooden letters
Wooden blocks with letters
Tape recorder for listening to and telling stories
Mirror
Chart paper
Thesauruses/dictionaries (three different levels)
Sand drawing/colored sands
Individual chalkboards
Taped books
Good earphones
Dress-up supplies
Miniature objects

Logical-Mathematical
Dice
Playing cards
Tangrams
Tangram puzzles of varying levels of difficulty
Unifix cubes
Abacus
Puzzles
Wooden numbers
Wooden blocks with numbers
Play money
Attribute blocks
Calculator
Flashcards
Math games and puzzles
Water table/sand table
Bauhaus blocks
Sticks and circles
Microscope
Magnifying glasses: small, medium, large
Spin tips
Gyroscopes
Mirrors

Spatial
Tissue paper
Drawing paper and brushes
Large floor map
Globes
Geography maps
Various colored pencils
Watercolors
Tempera
Play-Doh and/or clay
Scissors (also left-handed)
Glue
Legos, Tinkertoys, Lincoln Logs, and other materials for construction
Capsels
Large wooden or plastic blocks
Things to take apart and put back together
Watercolor paper
Easels and aprons
Chalk pastels (hard)
Oil pastels
Posterboard
Very fine brushes
Origami paper
Stencils
Clay hammers (for indenting and embossing)
Wet sands and models for sand
Graph paper

Musical
Music from different cultures and in various styles
Flutes (wooden or plastic)
Keyboards
Household items for making different sounds
Bottles to fill with water and make different pitches
Tape recorder/player
Guitar
Xylophone
Rhythm instruments such as maracas and drums
Pentatonic bells and harp
Tapes
Sing-along tapes/records

Bodily-Kinesthetic
Giant bubble maker
Mirrors
Sewing kits
Clothes for dress-up and creative drama
Spin tops
Pictures of exercises and simple yoga positions
Sand trays for drawing or writing
Magic wand
Mosaics
Blocks and sandpaper
Wood scraps

Intrapersonal/Interpersonal
Rocking chair
Charts for record keeping and self-evaluation
Books/pictures of families
Self-portraits drawn by classmates
Videotapes/audiotapes of class activities
Quiet place
Duplo bricks and people, farms, animals
Got To Be Me cards
Blank books

Combined with self-discovery in these learning centers will be individual, small-group, and large-group activities to develop a well-rounded educational experience.

will form the basis for periodic assessments of the student's growth in important areas. Both the student and the teacher select items for the portfolio, indicating their reasons for choosing a particular piece. Parent–teacher–student conferences include discussions of these portfolios and the growth demonstrated by the products included. Portfolios from the classrooms also form the basis for assessment of general skill development at the school and decisions about overall curriculum design.

An important element of this classroom is the integration of Howard Gardner's (1983) Theory of Multiple Intelligences through existing and new curricula. One curriculum used by the teacher is Project Success Enrichment (George, 1993), a nationally validated program in which language arts (linguistic intelligence) and visual arts (spatial intelligence) are integrated in the development of skills and creative expression.[2] This curriculum is combined with a teaching series using mime[3] to help children develop their writing by integrating bodily–kinesthetic intelligence into the process. In both of these curricula, children work together in both structured and unstructured groups to write, mime, and produce artistic products incorporating universal human messages (interpersonal intelligence) as well as their own personal motivations, beliefs, and interests (intrapersonal intelligence). Finally, music is an integral part of the children's classroom experience. Varied forms and genres are played as the children work; they create music to accompany their productions and select music that expresses abstract ideas as well as the mood of a painting or poem. During the study of cycles, for example, they also exercise their analytical skills as they trace the varied cycles in different types of music.

The Children

Eryck. When visitors walk into Gail's classroom, they usually see Eryck first. He never seems to stop! Always moving, changing positions, demonstrating, acting out real and imagined situations, and often wreaking havoc in the classroom, Eryck could be many teachers' worst nightmare. In Gail's classroom, Eryck is happy and busily learning in his own way. If a verb needs to be acted out or an abstract concept needs to be demonstrated to help with English language and vocabulary, Eryck is always available. He is good at it, too. He seems to be able to show complex emotions with his facial expressions and to create entire scenes with a few movements of his hands and body. Eryck picks up new

dances quickly and easily, and he wants to teach everyone in the class.

Music is Eryck's second love. He is learning to play the guitar, loves drums of all kinds, and enjoys experimenting with the different rhythms and tones in the small electronic keyboards Gail has in the music center. Eryck can recognize every tape in the music library of the classroom after only a few notes are played, and he usually hums or sings along with whatever music is being played. He has some favorites, but does not reject any style of music Gail or the children choose to play.

The children enjoy a music class twice a week, and of course Eryck is a star there (whenever he can sit still!). The music teacher, who formerly taught music at the high school, has not yet learned how to accommodate the needs of active young children. Eryck is intriguing to this teacher, however, and he is surprised by this young child's ability to sing on pitch and to repeat tonal and rhythmic patterns perfectly.

Alicia. Alicia is another active child who never seems to stop moving around. Her focus, however, is on people. She wants to know what everyone in the class is thinking and doing. Seldom is Alicia seen working alone, and she seems to be at her best when involved in a cooperative group activity. After Eryck, Alicia usually is the second person visitors notice—but for different reasons. Alicia's love of people compels her to find out about everyone who comes into the class. She introduces herself, asks the visitor's name, and begins to explain how the class is organized. Alicia makes certain everyone feels comfortable, giving them a chair, pointing out where they might want to sit, and inviting them to sit with her at lunch in the cafeteria. People always feel welcome around Alicia, and she invites everyone to "come back again tomorrow."

Many of Alicia's wonderful stories involve believable, interesting characters. She invents human characters and gives animals human traits. Her biography of "Gerald," an eccentric, rather weird old miner she invented, won first place in a schoolwide essay contest recently. Readers find her humor and ability to portray our most human strengths and weaknesses quite captivating.

Although Alicia seems to take over any group she is in, it doesn't appear to bother anyone. She listens to the other children and does her best to see that everyone's opinion is heard and respected. Her first grade teacher had a difficult time with Alicia because she felt that Alicia was so focused on everyone else that she never finished her own work. However, Gail seems to know how to involve and engage Alicia by allowing her to use her interest in people to develop her writing, math, and other content-related skills.

Alicia speaks both English and Spanish fluently and can read and write in both. She preferred to write in Spanish at the beginning of the school year but is starting to be comfortable writing in English as well. Gail is encouraging her to continue using both languages and provides many opportunities for Alicia to read the best literature in both languages. Alicia's parents, who speak little English, indicate that they have begun to rely on her more and more to translate and interpret for them in social and business situations. Her interest in people, combined with these bilingual abilities, makes her a welcome addition to adult groups and a great asset to her family.

Grades One, Two, and Three

The Classroom and Teacher: Mindy

Mindy and other teachers in her school are experimenting with multiage classrooms. Each year, they work toward achieving a class with approximately equal numbers of children of each age. Children enter the class as first graders and stay with Mindy until they complete third grade.

Since cooperative learning is an important component of her philosophy, Mindy is pleased that she can have children in her classroom for 3 years. The fact that only one third of the group is new

each year also is helpful, as it facilitates the learning of cooperative processes. Children who already have acquired cooperative learning skills can model for those who are new to this type of classroom experience. Mindy is aware of some of the problems involved in using cooperative learning, and she is determined that she will not use the gifted students in her class as teachers. Thus, the groups are structured differently for different purposes. Sometimes, for instance, all the children who are gifted in language work together, and those whose abilities are in the nonverbal, spatial areas are together in another group. At other times, students choose to work with those who share a particular interest such as collecting rocks and minerals.

Visitors to Mindy's class may have to search for the teacher. She is not at the front of the room, nor is she at the teacher's desk in the back of the room. She usually is sitting at a table answering questions, posing questions, reviewing students' products, and giving suggestions. The only time Mindy visibly seems to be in charge is when a special event, a change in schedule, or a special problem requires a group discussion. She also plays a more prominent role when the content unit or theme changes or a new learning center is introduced.

Although most activities in Mindy's class occur in small groups, individual choice and large-group activities are also a part of the schedule. The environment is filled with interesting, exciting materials, and student work is displayed everywhere. A large mural with student art related to the current unit of study always covers one wall of the classroom. One of the most interesting recent units was on ancient civilizations, and the classroom was transformed into a castle, complete with a drawbridge and moat near the door. Mobiles hang from the ceiling, books written by children are in the library, computers and printers are constantly available, and quiet, soft spots are set aside for reading.

Most of the time, students rotate through the centers and daily activities. They decided they wanted Mindy to plan many of the learning experiences because "she is the teacher." However, they very much appreciate her willingness to listen to their suggestions about what they would like to learn. Some of the children are requesting more individual choice time, and Mindy is wondering whether she and the children might be ready to move from forced rotation within a time schedule to a more flexible system that allows students to get into the "flow" of an activity and take as much time as they need. Children working on a watercolor or pastel art project, for instance, find that a great deal of time is lost in getting out and putting away materials. They want to complete a painting while the image of what they want to do is clear rather than putting it away and rethinking it the following day. Writers feel the same way; they frequently would like to spend more time than the allotted 20 minutes without disrupting the scheduled rotations.

Children are not grouped according to grade levels or age. In writing, reading, and math, they are grouped according to their levels of skill development. One girl is so far ahead of the other students in math that she works alone, with assistance from the teacher and occasional help from the math teacher from the high school. Since skill areas are the focus of the morning activities, these groups rotate through centers until lunchtime. In the afternoon, groups are based on interests relat-

ed to the topic of study and include the general content areas of science, social studies, and health. Groups are more fluid in the afternoon, but they generally stay together throughout a unit of study. One or two days each week the children have free choice time in the afternoon and may select any activity they wish. During these times, they keep a learning log indicating which activities they chose. This helps both the student and teacher to monitor interests and learn more about the student as an individual.

The Children

Natasha. Natasha has been in Mindy's class for 3 years. From the beginning, Mindy noticed her quiet, observant approach to learning. Natasha does not say much, and some teachers might ignore her or miss her outstanding ability to think. During an early assessment using tangrams and tangram puzzles, Mindy and an observer noticed that Natasha, unlike her peers, worked a whole page of puzzle shapes rather than solving each puzzle shape separately and then finding it necessary to take some of them apart. Natasha placed the large pieces on the puzzle first and then filled in the spaces with smaller pieces as she studied both the page and the available pieces carefully.

Mindy finds Natasha's abilities in math to be interesting and somewhat unusual. Natasha actively dislikes, and is not particularly good at, computation. She does not know her addition and subtraction facts; however, she can demonstrate with Cuisenaire rods, Unifix cubes, and other math manipulatives how the operations, including multiplication and division, are done. In fact, she often shows other children how to use these materials in working problems. Realizing that most higher math is more conceptual than computational in nature, Mindy has provided a challenging atmosphere for Natasha. She is progressing at her own pace in algebra and geometry with the assistance of weekly tutoring from a high school math teacher. Both teachers recognize Natasha's unusual conceptual abilities, and they encourage her to use a calculator to perform the operations Natasha finds so distasteful. They realize that she thoroughly understands how to do the operations and wishes to proceed to more challenging, thought-provoking experiences.

Natasha also has exceptional abilities in the visual arts. At a very early age, she created abstract representations of concepts even though her verbal explanations of these concepts seemed

limited. She represents perspective and creates accurate, detailed drawings of horses and other animals in her rural environment. When she was in first grade, her painting of a cat won first place in the watercolor competition for her grade at the school's art fair. In second grade, her crayon drawing of a cow smelling a flower was the grand prize winner for the district art fair. When group projects involve the creation of visual products, everyone knows which group Natasha was in. She has become fascinated with pastels and the varied images that can be created with this medium. Mindy has been thinking lately that she should invest in some more sophisticated materials and paper to allow Natasha to grow and develop in this area as well.

Leanderson. Leanderson also is exceptional in the visual arts. At the moment, he is interested in pencil and charcoal and in practicing large, free movements using colored markers. Recently, Mindy invited an internationally known visual artist to come into her class and work with the children. He showed slides of his work; demonstrated how he uses color to "make a painting dance"; and worked with the children to produce art that was colorful, free, and fun. During the slide show and demonstration, Leanderson was totally absorbed, watching intently and doing his best to imitate the style and freedom of this fascinating artist.

In his quiet, unassuming way, Leanderson also showed his other passion: the personal. He made certain he was near the artist at all times and quietly and respectfully invited him to have lunch in

the cafeteria. They seemed to become instant friends, and Mindy was surprised to find out the next day that the artist had stayed in town an extra evening so that he could go hiking in a nearby canyon with this wonderful little boy.

Most visitors to the class have similar experiences with Leanderson. He immediately makes contact with new people, and he always invites them to lunch. He often gives them a pencil, a drawing, or a rock or shell from his pocket. With his peers, Leanderson never "takes over" a group or seems to overtly influence the direction it takes. However, his quiet, firm influence is clearly felt, especially if the group has a disagreement or if conflict develops. Leanderson's personal wisdom and universal fairness are understood and respected by his classmates.

Leanderson's mother recognizes the same traits at home and says that he is the undisputed leader, advisor, and confidant for their extended family of 20 cousins, brothers, and sisters. He is not the oldest of the group, but when he speaks everyone listens. They may not always agree, but their respect is clear.

Another, very important part of Leanderson's focus on the personal is his sense of self. He is unwilling to conform or to do anything he believes is wrong or harmful to himself or others. Peer pressure seems to have no impact on his behavior. He simply smiles and says "No" in his quiet, firm way. Sometimes, he even looks up again and adds, "but thanks for asking."

Humor is an essential ingredient in Leanderson's life. Once, when he was frustrated at not being able to work a set of tangram puzzles, his group burst out in laughter as they watched him try to put a spell on the pieces to make them "get smaller." When a group gets caught up in a conflict or a problem, he makes a joke or a gesture to get people to laugh, easing their tension so they can begin again. Often his drawings have a whimsical character or an expression that makes people laugh or smile as they enjoy what he has created.

CHAPTER 2

A Framework for Viewing Giftedness and the Contexts of the Classrooms

All the classrooms described are in public elementary schools. The children in the classes have a wide range of abilities, and they have not been specially selected or placed there. In Gail's and Mindy's classes, a few children have been placed by parent request, which is a general school policy. Class size ranges from 22 in Ruth's and Maribel's class to 26 in Gail's.

The schools are in very different settings: Ruth and Maribel teach in an urban, multicultural, low-income area considered dangerous because of the high crime rate. Gail's school is in a middle- to low-income area in a town on the U.S.–Mexico border, where 98% of the children are Mexican-American and 90 to 95% of the children speak Spanish as their first language. Mindy's school is in a rural area in a small town on the Navajo Indian Reservation. The students are Navajo, except the children whose parents work in the school. Approximately one fourth of the students come to school speaking only Navajo, but most speak English, and some are bilingual when they enter school.

The one common element shared by the teachers, classrooms, and children is that they are participants in the DISCOVER projects, which are federally funded research and development programs designed to assist educators in identifying and planning programs for gifted children from diverse cultural, ethnic, and linguistic backgrounds. The framework employed to understand and nurture the development of giftedness is Howard Gardner's (1983) theory of multiple intelligences combined with June Maker's (1993) definition of giftedness, Schiever and Maker's (1990) problem continuum, and the principles of curriculum development for the gifted presented first by Maker (1982) and refined and applied recently by Maker and Nielson (1996).

Gardner defined intelligence as the ability to solve problems and fashion products that are relevant in a particular cultural context. In his view, problem solving includes both solving known, clearly defined problems and creating new information at the frontiers of knowledge. He further expanded this view of intelligence by describing seven different, distinct domains or "intelligences," and by showing how these seven intelligences have certain "core operations" and are neurologically separate. These intelligences are listed and defined in Figure 2. Recently, another intelligence, "the naturalist," has been added, but since information and research on this intelligence are sketchy, it is not included in the DISCOVER

FIGURE 2
Definitions of Multiple Intelligences According to Gardner (1983)

Bodily-kinesthetic intelligence consists of the ability to use or control one's body in different and skillful ways, for expressive or goal-directed purposes. It also involves the capacity to work with objects, and includes both fine and gross motor movements.

Intrapersonal intelligence is the ability to access one's own feelings and emotions, and to make quick discriminations among them. It also includes a willingness to draw upon these feelings and emotions as a means for understanding and guiding one's own behavior.

Interpersonal intelligence is the capacity to notice and make distinctions among other individuals' moods, temperaments, motivations, and intentions and to draw upon this knowledge as a means for understanding and guiding the behavior of others and oneself.

Logical-mathematical intelligence consists of (a) sensitivity to mathematical and scientific problems, (b) speed and power in abstract reasoning, (c) the ability to recognize patterns, and (d) the capacity to carry out the implications of one's thinking.

Linguistic intelligence is manifested by sensitivity to the many properties of words (e.g., meanings, order, sounds, rhythm, inflections, meters). It also includes mastery of one or more of the functions of language: to entertain, to convince, to help remember, to explain, and to reflect upon language.

Musical intelligence consists of an exceptional sense of rhythm, heightened awareness and sensitivity to sound, and/or well-developed aural imagination. It also includes the ability to convey feelings through music.

Spatial intelligence is manifested by accurate perception of forms, patterns, and objects regardless of their position in space. It also involves the ability to mentally manipulate or transform spatial relationships and the ability to discern similarities across diverse domains.

projects at this time. Abstracts that describe DISCOVER projects can be found in Appendixes C and D.

Within the framework of multiple intelligences theory, Maker (1993; Maker & Nielson, 1996) has defined giftedness as the ability to solve the most complex problems in effective, efficient, elegant, and economical ways. Recognizing that gifted people also are adept at solving simple problems, however, she believes that the ability and willingness to solve complex, multifaceted problems is the key concept in giftedness and must be the most important part of a definition of exceptional ability. To identify giftedness in multiple intelligences, Maker and her colleagues (Maker, 1992; 1994; Maker, Nielson, & Rogers, 1994) have developed problem-solving activities for children to do both individually and in a group setting. Experienced observers watch carefully and identify those children who demonstrate effective, efficient, elegant, and economical problem-solving behaviors.

The children in the classrooms described here have been identified as gifted based on this process. Before reading this next section you may find it interesting to reflect on those descriptions and compare them to the information presented in Figure 2. In which intelligences are Carlos, Crystal, Eryck, Alicia, Natasha, and Leanderson gifted? (See Table 1.)

Teachers also observe children, and they are assisted in developing curricula and teaching strategies to nurture the development of all children by focusing on multiple intelligences in a regular classroom setting. The general principles advocated are common elements in all the classrooms described in the previous chapter:

1. Exploratory learning centers or areas containing the "tools" of each intelligence (see Figure 1 for examples).

TABLE 1
Areas of Giftedness of Carlos, Crystal, Eryck, Alicia, Natasha, and Leanderson

Child	*Areas of Giftedness*	*Child*	*Areas of Giftedness*
Carlos	Linguistic Logical-Mathematical Spatial	*Alicia*	Linguistic Interpersonal
Crystal	Linguistic Logical-Mathematical Intrapersonal	*Natasha*	Logical-Mathematical Spatial
Eryck	Musical Bodily-Kinesthetic	*Leanderson*	Spatial Interpersonal Intrapersonal

2. A balance of small-group, large-group, and individual choice activities.
3. Self-selected formats for products.
4. A variety of problem types (see Table 2 for examples).
5. Interdisciplinary themes.
6. Integration of the cultures and languages of the children and community.

If teachers implement these principles fully, they generally incorporate most of the content, process, product, and learning modifications advocated by Maker and Nielson (1996) as important principles in designing curricula for gifted children. We must emphasize, however, that the principles of DISCOVER just listed were designed to assist regular classroom teachers in providing for the development of the strengths of all children in a heterogeneous classroom setting. Research in a pilot study (Maker, Rogers, Nielson, & Bauerle, in press) demonstrates the positive effects the implementation of these principles can have on the growth of all children in a class.

Through the interactions that led to the writing of this book, we also have found that the principles advocated in the DISCOVER projects are highly compatible with the principles of developmentally appropriate practices advocated for the education of young children. In fact, we believe they go hand in hand. Each set of principles can help educators to understand and apply the other principles with greater depth and assist in planning for children with diverse abilities, developmental growth patterns, cultures, languages, temperaments, and individual needs. We invite you to reflect on these ideas as you read the principles and examples in the next chapter.

CHAPTER 3

Developmentally Appropriate Practices

What are the consistent principles the four teachers described in this book have used to structure a learning environment that will nurture all their young gifted students? Basically, they are principles of developmentally appropriate practice. *Developmentally appropriate practice* is a term first used by the National Association for the Education of Young Children (Bredekamp, 1986). It is used to describe the characteristics and components of high-quality early childhood teaching and learning environments. Our personal interpretations of these elements are presented here, along with examples of the classrooms and children we have introduced.

Knowledgeable Teachers

Teachers working in early childhood classrooms (infancy through third grade) need to have knowledge and expertise in the fields of early childhood education (The Council for Exceptional Children, 1995) and of education of gifted children (The Council for Exceptional Children, 1995). Understanding children's developmental levels and needs, how children learn, and how to use teaching strategies and methods appropriate for young gifted children are essential skills for early childhood teachers. Even though early childhood teachers do not have to be experts in all areas, they need a basic understanding of content in the liberal arts and the sciences.

Love of learning and exploring and the willingness to remember how it feels to be a novice learner are helpful traits in early childhood teachers. Ruth says that she has never been "out of school" for more than a year in her life, and she currently is completing an endorsement program in early childhood education to add to her many other degrees and endorsements in education and liberal arts content areas. Maribel is certified in bilingual education and has a number of specialty areas in science as well as the arts. Gail is completing a master's degree in education of the gifted and has an endorsement in teaching English as a second language. She takes classes in visual arts and dance to broaden her understanding of ways to nurture the giftedness of children whose interests or strengths are in the arts. Mindy also has a long list of endorsements and credentials, including a master's degree in education of gifted students. The children obviously appreciate Mindy's ability to remember her own childhood as she shares experiences and learning problems she had as a child.

Reflective Teachers

Reflective teachers have a vision of what they want for children and what they want their students to learn. In this context, they think carefully about the type of curriculum they want to use and why they provide certain lessons, choose particu-

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lar materials, or respond in the manner they do. A clear philosophy regarding children, their development, and the teaching approaches best suited to this philosophy also is helpful. Asking questions of themselves helps teachers engage in reflective thinking. Why do I teach in the way I do? What makes me choose a basal reader or a literature-based approach? Why do I give children choices rather than expect them to all do the same thing? Why must all children sit in their seats rather than move around? Why do some children bother me more than others? Why do challenging children bother me more than children who are not so challenging? Only when teachers know why they act in a certain way does the "what" make sense. They can then begin to have a stake in how and what they teach and believe in it. Only when teachers feel they have a stake can they articulate what it is they want for the children they teach and feel comfortable enough not to be pressured to do things that are not in the best interests of children. Teachers become empowered when they know and can act on their beliefs.

One of the most rewarding experiences of visitors to Ruth's and Maribel's class is that everyone is invited to offer suggestions for improving the class! The teachers are willing to explain their beliefs about how children should be taught, but they also are open to suggestions that fit with these basic philosophies. Whenever a new program or opportunity is presented at the school, Ruth is always open minded, but she is unwilling to participate in any programs that she believes will restrict the children's freedom to explore and solve problems in her classroom.

Teacher Attitude

Developmentally appropriate practice is a way of thinking about children and how they learn. Through developmentally appropriate practices teachers create an educational environment that is flexible and responsive to children's needs and abilities. The environment is one in which children are empowered and accepted for who they are as well as for the skills, abilities, and behaviors they bring to the classroom. Children feel safe and secure in their interactions and relationships with the adults. They are allowed to express their ideas and ask questions. They are encouraged and supported in the view that learning is a problem-solving activity. Learning is an active process. An understanding of and respect for children's abilities and capabilities form the basis for the curriculum.

In all of the classrooms described here, the teachers respect children and provide an overall atmosphere in which children feel free to learn in their own ways. In Mindy's classroom, for instance, students chose the themes they wanted to study during the year, but they decided that Mindy should create the learning centers and design the learning experiences for each of the themes. They also decided that they wanted to experience all the centers, so they needed to rotate through them. However, Mindy also responded positively to their requests to change the format to allow for more student choice, and she is considering whether an even freer environment might be appropriate.

Another important quality of the three classrooms is the teachers' belief in the multidimensional, multifaceted nature of giftedness. Gail, for instance, recognizes that Eryck is gifted in musical and bodily-kinesthetic intelligences, and she encourages his development in these areas even though she recognizes that his skills in reading, math, and science are at a much lower level than those of others in the group. Gail also recognizes Alicia's interpersonal giftedness and encourages

her to exercise her leadership capabilities through working with various groups to achieve different goals. In some classrooms, children like Alicia might be viewed as unfocused or as too active and asked to stay in their seats or at their tables. Ruth and Maribel understand Crystal's inability to sit in a group, and they allow her to pursue her own interests as long as she does not disrupt the group. They also recognize that she is far ahead of the group in many areas and that she does not "need to be present to learn." Her giftedness in logical-mathematical and linguistic intelligences is apparent in all her work. Perhaps her giftedness in intrapersonal intelligence (understanding of herself) is most significant, however, since this strength contributes to her unwillingness to allow herself to be bored! Mindy recognizes Natasha's giftedness in logical-mathematical intelligence demonstrated through solving nonverbal, visual problems. She also recognizes Leanderson's quiet, unusual giftedness in the personal intelligences, and she provides as many opportunities as possible for these children to exercise and challenge their abilities.

Ruth, Maribel, and Gail respect the linguistic abilities of their students whose dominant language is not English. They understand, for instance, that Alicia's early ability to translate for her parents is a sign of her bilinguistic giftedness even though her skills in reading and writing English are lower than those of many of her classmates. Carlos, who does not yet speak English, already is recognized for his giftedness in linguistic intelligence due to his sophisticated vocabulary in Spanish.

The Importance of Knowing Children

Knowing the children they teach at a personal level is an essential quality of effective early childhood teachers. Knowing children at a personal level means knowing where they are developmentally in terms of cognitive, social, emotional, and physical characteristics; their areas of giftedness; and their unique behaviors and characteristics. The teacher can acquire information about the child's individual needs from interactions with parents, observing the child in the classroom, and engaging in informal conversation with the child.

Talking with a child's parents or family members is one way of finding out what the child is like at home. From the parent, a teacher can find

out what the child does with friends at home and the types of activities in which the child participates. A teacher might also want to know about the child's special interests. If the child spends a great deal of time at home talking and reading about dinosaurs, the teacher could bring dinosaurs into the classroom. The teacher might provide reading, writing, or dramatic play activities that focus on dinosaurs. The child could identify, label, and classify dinosaurs; read books about dinosaurs; recreate the way dinosaurs lived; compare the world of dinosaurs with the world of today; and explore the concept of extinction.

Parents also may inform the teacher about the child's behavior and temperament and how the child handles situations at home. For example, a child may have difficulty coping with change at home as evidenced by difficulty getting dressed for school. Transitions in the classroom also may prove difficult for the child; he or she may withdraw from new situations and have difficulty beginning and ending activities. Sharing information may help both the parent and teacher understand that this is a pattern of behavior. Further discussions with the parent may lead the teacher to realize that the child always has exhibited this behavior and that it may be linked to the child's temperament. Understanding these relationships

may help the teacher prepare an environment that aids the child in making transitions. A simple solution might be to provide additional time for the child to prepare for transitions. For one child a warning that a change is going to occur may be all that is needed; whereas another child may need direct assistance from the teacher.

An essential part of Ruth's and Maribel's program is home visits. They visit each child's home at least once during the year, and more often if invited or if needed. Parents are invited to check out the learning activity packets near the door of the classroom, and the checkout log provides a record of experiences children or their parents have chosen. Both teachers can be heard asking about children in the parent's language every time parents visit the class or pick up their children.

Gail and Mindy have parent conferences in which half the time is spent asking about the children's activities at home and half the time is spent telling about the children's lives at school. Gail sends home a parent inventory (in Spanish and English) at the beginning of the year and interviews parents by telephone if they do not return the written questionnaire. She feels this gives her a head start in getting to know both the children and their parents.

The information gained about their students helps these teachers plan more effectively to meet the children's needs in the classroom. Gail, for example, might have assumed that Alicia's linguistic abilities were limited if she had not found out from her parents that they were relying on her for assistance in translation. With this knowledge, she could recognize Alicia's abilities and provide enrichment and challenge through advanced reading materials in Spanish while assisting in the development of basic skills in English.

In addition to using information gained from parents about the child, teachers can use observation in the classroom to alert themselves to individual children's behavior. Watching how a child interacts with materials and other children and adults may help the teacher understand the child better. It also will assist the teacher in planning curricula to meet the individual needs of the child.

Talking and listening are important ways to get to know children. Engaging in informal conversations with children enables the teacher to find out what they think about school, home, and friends. Sharing information about oneself with the child also helps to foster a more personal and open relationship, which often results in trust. For example, talking to children about their pets or what they did on the weekend sometimes creates an opportunity for teachers to share information about their own pets or their experiences during the weekend and develop a mutual respect and trust that will facilitate learning.

Since none of the teachers described in this book spend the majority of their instructional time in large groups, they can observe and talk with children individually, thereby learning valuable information about interests and abilities. Ruth and Maribel, for instance, have developed a system for observing children in which each carries a standard-sized adhesive note pad in a pocket and jots down observations of children during the day. At the end of the day they stick the notes on a chart listing the seven intelligences across the top and all the children's names down the side. Using this organization, they can easily see both the focus of their observations and the activities of the children. The result may be to change or eliminate one of the learning centers because the children seemed not to be interested in it, encourage a child to try a different center or activity, or attempt to gather observations of children about whom they have fewer notes.

In short, their observations of children may result in changing the learning experiences provided or may result in encouraging students to broaden or stretch in new ways. Observational systems like the one Ruth and Maribel have devel-

oped also can help teachers learn about themselves. One group of teachers we observed recently realized that they tended to have twice as many notes about the talkative children than the quiet ones. They made a commitment to themselves and their team to watch their nonverbal, quiet children more closely to learn about their strengths and interests.

Mindy started using learning logs after she decided that trying to keep a record of her students' choices was not a good use of her time. Her first, second, and third graders are quite capable of recording their own choices. She uses this activity as a tool for the students to reflect on their own interests and abilities as well as a tool for her own learning about them. Because of her effectiveness in planning for daily activities in advance, Mindy can spend her day talking to students, answering their questions, and watching their participation in cooperative learning groups. This active observation enables her to recognize her students' strengths and needs so her plans for learning centers can accommodate the range of skills she has observed in the students.

Gail uses her camera and tape recorder extensively. Sometimes she simply goes around the classroom snapping pictures of children's products and the groups in which they are working. She may set up a tape recorder in a group when she is busy elsewhere. These visual and auditory records have proven to be valuable records of the class's activities. She can go back and analyze the students' choices of centers, work partners, and other activities and can listen closely to interaction patterns that would be missed without a constant record of the group's work.

The information Gail gains about her students is used in ways similar to those of Ruth, Maribel, and Mindy: to plan more effectively for whole-group instruction and to provide more appropriate individual and small-group instruction that includes challenging experiences for children gifted in a particular area as well as experiences that are appropriate for those at other levels of development. Like the other teachers, Gail also learns about herself and uses this self-knowledge to help her change the environment so that it is more responsive to children she might otherwise neglect.

Age-Appropriate Practices

The age appropriateness of the curriculum is based on the belief that universal, predictable sequences of growth and development occur in all domains: social, emotional, physical, and cognitive. Knowledge and understanding of these universal, predictable sequences of growth and development equip teachers with the foundation to know how children at different developmental levels behave (Bredekamp, 1986; Bredekamp & Rosegrant, 1992).

An understanding of developmental norms (Allen & Marotz, 1994) will enable teachers of gifted children to know when children are performing above the norm as well as assist them in meeting the developmental needs of children in all domains—social, emotional, cognitive, and physical. For example, a child may be gifted in one domain such as linguistic intelligence and not be adept at handling the social aspects of language. Therefore, the child may use language in socially inappropriate ways. Likewise, a child may be gifted in logical–mathematical intelligence and able to use the concept of number in a variety of ways, but may be unable to write numbers because he does not have good perceptual-motor skills. Understanding developmental patterns and knowing that development often is uneven for young children is an important concept for teachers of gifted young children to acquire.

Crystal is an excellent example of a child whose development is uneven—extremely so. Sometimes she is 2 years old, sometimes 5, other times 12, and sometimes even 42! One day, when June came into Crystal's classroom, Crystal started the interaction with the "peek-a-boo" game—a game typically played by 2-year-olds. A few minutes later, she wanted to hear some stories, so she led June into a corner where the other children would not disturb them. She listened intently, pointing out patterns in the language and in the illustrations in the book (the class theme for the month was patterns). June was fine until Crystal asked her to read a book written in Spanish. She said, "But Crystal, this one is in Spanish. I can speak some Spanish, but I can't really read it." Crystal replied, "Yes, you can." June then tried, in her rather rudimentary Spanish, to read the book. Crystal gently took the book away and said, "This is how you do it." She proceeded to "read" all the pictures (in English), telling an elaborate and very funny story. By this time, the teachers were ready for a group activity. Crystal wasn't. She wanted to hear more stories. June, wanting to be as unobtrusive as possible and avoid disrupting the class, urged Crystal to join the group. When this did not work, she tried another approach: "Crystal, I want your teachers to let me come back to visit you, so

I have to be good. We need to go join the group." With a wise but kind look on her face, Crystal said, "You don't have to be good. You're not a kid." At that moment, June and Crystal understood each other adult to adult.

Many children who are gifted in an area such as logical-mathematical or linguistic intelligence are not physically ready to sit for long periods of time doing a teacher-determined activity. They also may not have social skills that enable them to work well with other children in these situations. A common reaction is for teachers to want to hold children back, or even worse, ignore their giftedness because the children do not possess the social or physical skills that enable them to demonstrate their giftedness in expected ways. Developmental norms are averages, and very few, if any, children are at the same developmental age in all areas of ability. Children who are gifted in one or more areas are more likely to exhibit extreme "peaks" and "valleys" than are children who are not gifted in any area.

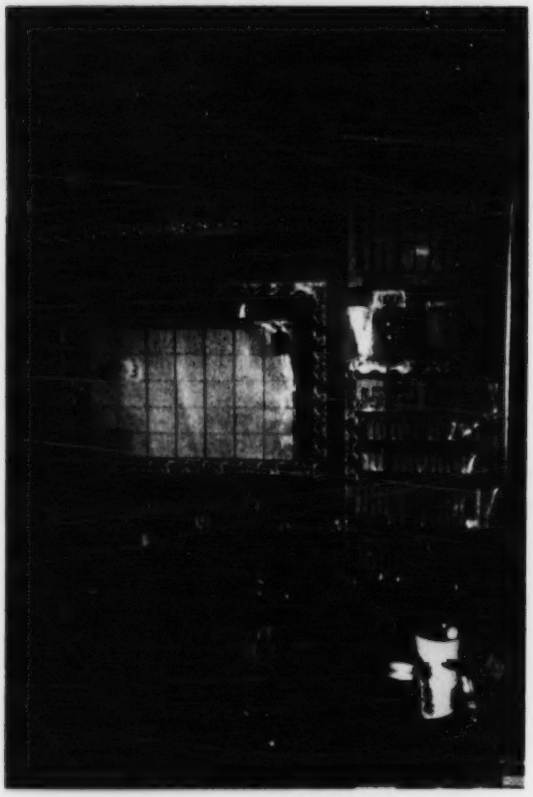
These discrepancies potentially exist in all areas of development. For instance, even though Eryck's development in music and dance is several years ahead of that of most of his peers, his language and math skills are not, and his social skills certainly have not kept pace with his development in music and movement. The teacher's challenge, then, is to nurture each child's development in all areas, without holding some back and establishing unrealistic expectations in the areas in which the child's growth is slower.

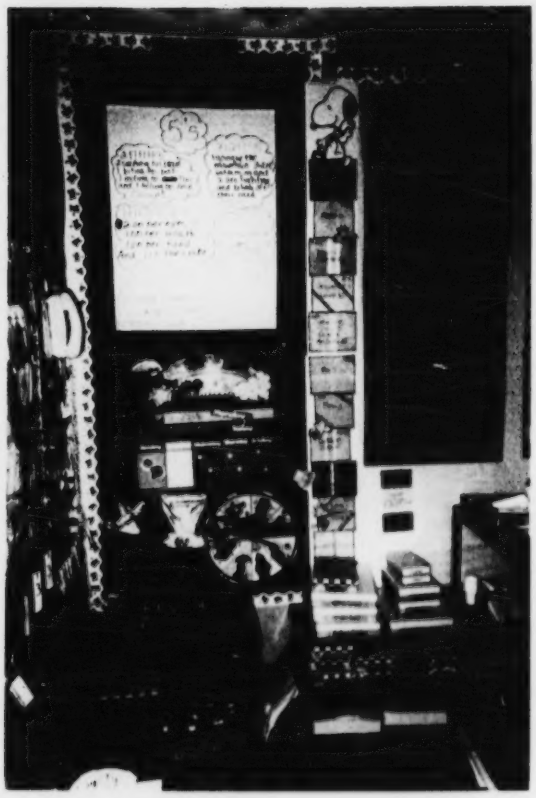
Individually Appropriate Curriculum

The individual appropriateness of the curriculum is based on the belief that each child is unique, with an individual and particular growth and developmental pattern (Chess, Thomas, & Birch, 1965). Factors such as interests; abilities; learning styles; biological predispositions and genetic makeup; temperament; and social, cultural, and ethnic background contribute to the development of the whole child. To meet the needs of the individual in the classroom, the teacher needs to have knowledge of the child's interests, abilities, and learning styles as well as past experiences, family background, temperament, and coping patterns. Knowing children as individuals allows teachers to look at them in terms of their individual strengths and abilities and gain an understanding of how they might begin to meet each child's needs. For example, understanding that a child is gifted in spatial intelligence may help the teacher think about ways to create opportunities for the child to learn concepts through the use of manipulatives and hands-on activities.

One of the most important ways the teachers described in this book accommodate individual needs is to provide a wide variety of choices in the classroom setting. Each teacher has provided these choices in her own way, however. As a group, they represent a continuum of structure. At one end of the continuum are Ruth and Maribel, who organize group activities only twice each day (morning and afternoon), leaving most of the day for students to choose freely from the problem-solving experiences in the many learning areas. Students sometimes are encouraged or invited to try something different, but they are not required to rotate or move through centers or activities. Each of the learning areas contains a variety of materials as well as varied levels of complexity and difficulty to accommodate different interests as well as different ability levels.

In the middle of the continuum is Gail, who has placed students in skill groups for math and reading but gives them the freedom to choose groups and topics when involved in other learning experiences. Although Gail chooses the themes and plans the centers, students select topics within the





themes. The students also decide how they will gather information (books, videos, observation) and how they will show what they know (e.g., a mural, a report, a piece of music, a dance). They also choose the language they will use to gather and present their learning.

At the more structured end of the continuum is Mindy, who plans learning centers and expects students to rotate through them. The students still have many choices, however, and Mindy is seriously considering her readiness (and the children's) to introduce more freedom of choice. In her classroom, students have decided which themes are of interest to them, and they now spend one or two afternoons each week in centers of their choice. They also select interest areas or topics within each theme.

In addition to student choice as a vehicle for accommodating individual needs, the teachers described in this book use flexible grouping arrangements. In Mindy's and Gail's classes, reading and math groups are based on the students' levels of skill development. If some students are much further advanced than others in an area (e.g., Natasha in math), their needs are accommodated through whatever individualized experiences the teachers can arrange. Mentorships, after-school clubs, extra time in the library, special materials purchased or borrowed for the child, or other arrangements can go far toward helping students develop in ways appropriate for them as unique people. Sometimes, all the teacher needs to do is ask the child what would help him or her learn better.

Acceptance of Diversity

Another issue related to meeting the needs of the individual child involves recognizing and accepting the child's cultural and ethnic background. Children come to the classroom with a cultural identity that reflects their home and community. Gaining information about the culture children bring to school is important to providing a comfortable learning environment for all the children in a classroom. For example, some minority children may speak a nonstandard dialect of English while other children may come to school with limited production and comprehension skills in English. When the teachers accept the languages children bring to the classroom, the chil-

dren feel good about themselves and their culture. Children must have opportunities to learn the language of the larger society while at the same time they are allowed to use their home language at school.

In cases in which English is the second language, knowledge of children's first language is very helpful. Gail, for example, is not proficient in Spanish. However, this lack of proficiency does not prevent her from providing reading materials in Spanish, nor does it prevent her from encouraging the children in her class to write or present reports in Spanish. An interest in children's home language and culture, coupled with a willingness to recognize and develop their abilities, will lead teachers to spend extra effort to find individuals who can assist them in selecting materials and in reading and interpreting children's written products in a different language. The most important quality of the teacher, however, may be a willingness to allow young students to be experts in an area in which the teacher is not proficient.

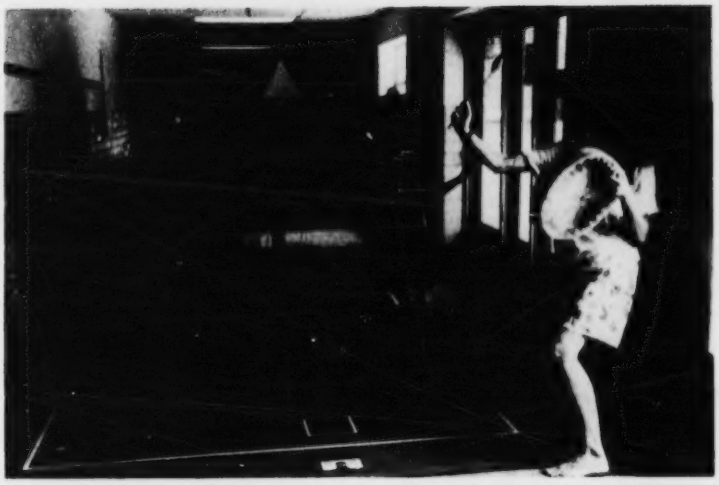
Appropriate language models and opportunities for children to have experiences with English and their home language in written and oral forms are important regardless of the teacher's proficiency in the children's language. Much research on bilingualism and English as a second language demonstrates that many deep structures of language are similar and that development of home language proficiency provides a sound basis for the addition of skills in a second language (Cummins, 1989, 1992). Supporting the child's culture and language is a key to helping children develop a positive sense of self.

In addition to encouraging the use of children's home language, teachers also can demonstrate respect for their culture by inviting parents to come and share, including studies of the history and arts of the cultures represented by children in the class, and celebrating events and holidays that are important in certain cultures. Other ideas have been offered by Allen, McNeil, & Schmidt (1992).

Materials, resources, and books that reflect the cultural and gender diversity of society without the stereotypes are essential in a classroom that reflects respect for individuals and groups.

Since many teachers tend to be from middle-class, mainstream culture backgrounds, they may have a tendency to view children's differences as "deficits," rather than recognizing the strengths children bring to school. Language certainly is an important characteristic to consider, and teachers are beginning to recognize that children who come to school speaking a language other than English have a strength that needs to be developed rather than a weakness to be overcome. In Gail's classroom, materials are available in two languages, and students produce written materials in the language they choose. The entire school atmosphere is designed to provide for development in both Spanish and English if a child's dominant language is Spanish. Ruth and Maribel, however, go even further, providing bilingual instruction for *all* children regardless of their dominant language. They (as well as others at the school) recognize the value of bilingualism in our changing world, and they know that children learn languages much more easily when they are young.

Two keys to providing a "respect-full" classroom are knowledge of the cultures of the children in the classroom and a willingness to recognize the richness and depth these cultures can add to our collective learning experiences. In the classrooms described in this book, the cultures of the children are integrated into the curriculum in natural and continuous ways. Ruth and Maribel, for instance, teach the children how to make piñatas, adobe blocks, and tortillas; celebrate Cinco de Mayo (Mexican Independence Day) as well as important American holidays; play music from all



cultures on a regular basis (e.g., Spanish guitar music, Mariachi music, African drums, African-American spirituals, Latin jazz); and teach songs and dances that are familiar to individuals in the class. Gail constantly examines her curriculum to make certain the poetry, classic stories, art, and historical events studied include a balance of Latin American, European, and Asian examples, since all these cultures are represented in her class. Often, she supplements the textbook materials with her own resources, however, since many still lack examples of great art (e.g., Diego Rivera) and literature from Latin American countries. The study of historical events from different cultural perspectives, such as the Gadsen Purchase from the Mexican point of view, are also additions to prepared texts and materials.

Mindy also supplements her curriculum with examples of great art and literature from Native American people. She brings contemporary artists and writers into the classroom and examines historical events such as the Long Walk from the perspective of Navajo people. The role of the Navajo code talkers in World War II is another example of a perspective on history that is important to Native American children. Respect for the Navajo clan system and the restrictions and cultural guidelines is also important in Mindy's classroom. For example, after a certain age, boys and girls who are members of the same clan cannot work together. Recognizing and participating in important celebrations such as the "first laugh" parties, dances, and ceremonies demonstrate Mindy's acceptance of the cultural traditions of the children in her class. She also has learned the cultural taboos that place restrictions on what children can learn or do at certain times of the year. String games, for instance, can be played in the fall, but not at other times of the year.

Children's gender needs also should be recognized, accepted, and incorporated in the daily operations of the classroom. Teachers need to be careful not to use language or exhibit behaviors that suggest they prefer one gender group over another. Gender differences, as well as similarities, must be considered in planning and implementing curricula. One common gender difference is in levels of activity. Boys simply are more active (Pitcher & Schultz, 1983), and usually prefer more physical contact. *Rowdy* may be an appropriate term for many little boys. In many classrooms, rowdy boys present problems. Boys are constantly being asked to sit down, stop this, stop that, and, of course, "don't fight." Why not allow boys to go outside or have a padded mat available for rough-and-tumble play? What about dance and movement activities in small groups? Why not let them stand while they write? Why do they have to sit in a chair?

One problem that needs to be solved at a social level is the lack of availability of toys and other materials that reflect diversity and are nonstereotypical. A recent attempt to buy toys depicting boys and girls involved in various activities revealed that boys (and men) usually were shown playing sports or in conflicts such as fights or wars. Girls and women were shown "being beautiful" or talking on the telephone. However, dolls and other people with brown faces are becoming easier to find, and they certainly need to be included as a part of the classroom environment. If such materials are difficult to find, teachers can work with children, older students, or parents on projects to create more appropriate, nonstereotypical toys and materials.

Humane, Supportive, Flexible, and Responsive Environments

Environments need to be humane, supportive, flexible, and responsive to children and their cognitive, social, emotional, and physical needs

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(King, 1996). To do so, the environment must reflect what we know about children's developmental traits and their individual needs. If children are the central focus, the environment must be responsive to their changing needs and growth patterns. Balancing the needs of the group and the needs of individual children is a major challenge, but knowing the children will allow the teacher to tailor responses to their individual and collective needs.

The arrangement of the physical learning environment, choice of learning materials and centers, and daily schedules can support children's learning. An environment that is flexible and responsive allows teachers to respond to the changing needs and interests of children by adapting schedules or changing the learning centers or materials. Flexibility and responsiveness also are needed when we begin to look at expectations for children. For example, on one occasion a teacher may insist that a child perform a task such as cleaning up the learning area before going outside. At another time, the teacher may allow the child to go outside without cleaning the learning area because when the child returns he plans to continue to work there.

Another circumstance in which flexibility and responsiveness are needed is when children are working on individual assignments or projects. Children are not developmentally even. They are not at the same level in all areas—social, emotional, physical, and cognitive. Therefore, individual assignments and projects can be designed to give children the opportunity to use their strengths while working to improve in areas in which they are less strong. For example, a language and literacy assignment may be for children to write a story. The length of the story, the tools chosen to write the story, and the length of time needed to complete the project need to be based on the needs of each individual child. One child may write a very long story using a computer. Another may write a shorter story using pencil and paper. Another child may use drawings to represent the story, and still another might use puppets to tell it orally. One child may complete the story in 1 hour, and another may need a whole day. Sometimes the project or assignment is not one that the child feels meets his or her needs. Talking with the child can help the teacher understand the child's perspective and decide how to adapt or alter the assignment. Sometimes the teacher and the child must negotiate. In all of these situations, flexibility is a key trait for a teacher. Children need to be allowed to bring closure to their own work, use their ideas to complete assignments and projects, and sometimes decide that a project does not meet their needs. Flexibility and responsiveness help teachers to avoid making absolute statements such as, "All children must . . . ." Flexibility and responsiveness bring the human element back into the classroom.

When the children in Ruth's and Maribel's class became interested in the ropes and lassos and

wanted to practice this dimension of being cowboys and cowgirls, rather than simply saying "No, you might tear up something," these flexible, responsible teachers moved the wooden horse, saddle, and ropes outside. The children had plenty of room for active experimentation and real learning. Perhaps this sort of movement is not always possible, but often adults say no without investing time in considering creative ways to accommodate children's learning needs.

Gail's willingness to have children present the results of their learning in self-selected formats and in the language of their choice is another example of flexibility and responsiveness in the classroom setting. Ruth's and Maribel's willingness to allow Crystal to not join the group is another. Mindy's willingness to plan with the children and her willingness to listen to their requests for more free choice time are other examples.

A Whole Child Perspective

A "whole-child" perspective is important for teachers of young children (birth to 8 years). Learning in school tends to involve mainly academic or cognitive learning. However, cognitive abilities are only one facet of children's development, and this facet needs to be seen in the perspective of their overall development. Children are connected socially, emotionally, physically, and cognitively; therefore, the classroom environment needs to include activities and experiences that help children develop in all areas. When children's social, emotional, and physical needs are met, they are better able to meet the academic challenges of the school environment: They succeed rather than fail.

For example, a first grade boy is gifted in logical-mathematical intelligence but unable to sit for long periods of time. The teacher spends a great deal of time reminding the child to sit quietly. The teacher may see the inability to sit as a sign of social immaturity. Instead, even though the child acts as if he were 12 years old when engaging in logical-mathematical experiences, in fact, he is only 6 years old socially, emotionally, and physically. Acknowledgment and support of the child's logical-mathematical abilities while meeting his physical and social needs are essential. Therefore, the teacher needs to provide opportunities for the child to interact with logical-mathematical materials and activities as if he were 12 but also offer active and physical learning experiences appropriate for a 6 year old. Six year olds need physical activity. They need to be able to move around the classroom and have hands-on experiences with materials and people. Planning challenging logical-mathematical activities that encourage movement and activity would enable the child to be successful in his area of giftedness and at the same time provide for his need to be physically and socially 6 years old.

Often when children exhibit maturity or exceptional ability in a particular domain, teachers may forget their chronological age and expect exceptionality in all domains. For example, a kindergarten child who is linguistically gifted may have excellent language skills and use language successfully when engaging in an intellectual conversation with children and adults. The same child may be less successful in using language when she is engaged in conflict with another child or an adult. She may revert back to techniques used by young children, such as yelling, hitting, or having a temper tantrum. Recognizing and understanding that even when a kindergarten child is 8 years old linguistically she may still be 4 years old socially and emotionally is essential. Instead of thinking that the child should be able to handle the situation because she is linguistically gifted, it is important to realize that she is not socially and emotionally gifted. Therefore, the child needs a teacher who is sensitive to these developmental differences and provides experiences to assist her in coping with conflict situations. A focus on the whole child allows the child to experience success in all domains, not just in the area in which he or she is gifted.

In Ruth's and Maribel's class, centers are set up to encourage individual exploration in cognitive areas such as math, science, and reading. Other areas of the class, such as the "casita" and the loft are places where children develop their social skills. At various times during the year, the casita changes into a supermarket, a school, or another social setting. The telephone booth is a popular spot for children to begin conversations with others. Another area of the classroom is set up for large-muscle movement and music. A padded carpet, a large top, steps, and large balls are standard items. Sometimes an "obstacle course" is set up in the hallway or outside so children can challenge themselves to develop physically.

Gail also has a dramatic play area, complete with interesting hats and other costumes. She encourages the children to act out their stories when writing, and to use these interactions to

improve their ability to resolve conflicts that may occur during their work together. Mindy believes that her focus on cooperative learning provides a valuable dimension to the classroom and helps the students develop socially.

A strategy used by all three teachers is to help children resolve their conflicts or problems through discussions rather than by a solution imposed by the teacher. A visitor to Ruth's and Maribel's classroom once reported her amazement at the number of alternatives two 5-year-old boys were able to think of when Ruth asked them "What else could you have done except hit him? What do you think might have happened if you had [e.g., asked him to stop] instead of hitting him?" This sort of question, asked in a nonthreatening way, without placing blame on either child, helps the children to develop their own skills for resolving problems rather than relying on an adult to impose a solution.

Active, Interactive Learning

From birth, children explore the world through the use of their bodies, their senses, and interactions with people and materials in their environment. Young children (birth to 8 years) come to know about the world in which they live by physically manipulating and transforming objects. Children first acquire knowledge of the physical properties of objects by using their senses to manipulate and explore objects in their world. Using their knowledge of the physical properties, children come to understand the relationships between and among objects in their world. An understanding of these relationships results from active exploration and involvement by the child, not by sitting and listening to an adult explain how things work. Children need opportunities to structure their own learning as well as opportunities to respond to teacher-directed learning experiences. For children to actively construct their own knowledge, they need

- Opportunities to manipulate, explore, discover, initiate, and choose.
- Real experiences.
- Interesting materials that can be used in a variety of ways.
- Materials they can take apart and put together.
- A physical environment that supports choices and encourages decision making.
- Opportunities to solve problems and answer their own questions.

In the three classrooms used as examples in this book, two important elements ensure that learning will be active and interactive: (1) the varied, exploratory learning centers with a variety of manipulatives or "tools" of the intelligences and (2) the teachers' willingness to allow students to explore and discover. The materials by themselves will not work, nor will they accomplish this purpose if they are kept in cabinets or out of the reach of children except when the teacher decides they can be used. Materials must be accessible, and children must be permitted to use them freely. The list of learning center materials from Gail's class (see Figure 1, p. 5) is a useful beginning set of manipulatives for an interactive learning environment.

Learner-Centered, Teacher-Facilitated Curriculum

The curriculum should be learner centered and teacher facilitated. A learner-centered, teacher-facilitated curriculum is not laissez-faire or a cur-

riculum in which children are free to do whatever they choose or nothing. The learner is the starting point for planning and implementing the curriculum, and teachers facilitate the learning process. At the heart and soul of the curriculum is the learner. A learner-centered classroom is one in which teachers base the curriculum and planning on what they know about children—how they learn, their interests, and their needs. Teachers who focus on the learner as the center of the curriculum rely less on textbooks and more on their knowledge base and external resources to create a learning environment for young children. Perhaps the increase in available external resources such as experts and artists who serve as resource people, information books, computers, Internet access, and videos will strengthen the teacher's role as facilitator rather than dispenser of information and knowledge.

Integrated Curriculum

The curriculum must be holistic, integrated, and germane to the child so that children learn in authentic environments that reflect their understandings. Children must make sense of what they are learning and connect these learnings with previous experiences. An integrated curriculum consists of the total experiences of the child during the course of the day. In other words, all that happens during the day is considered important to the child's learning process. Integrated curricula are planned around ideas and questions that are important to children. These ideas or questions may be initiated by the learner or by the teacher. Teachers and learners plan activities and experiences and direct the teaching and learning process. Activities and experiences occur through the use of learning centers and project work with an emphasis on problem solving and inquiry. Learning centers and projects combine all areas of the curriculum—science, mathematics, language, literacy, arts, music, movement, dance, health, safety, and outdoor activity.

Ruth, Maribel, Gail, and Mindy have used themes such as patterns, environments, cycles, change, and systems as a way to integrate the curriculum and provide an environment that is learner centered. The children have input into the choice of the themes, and they also may choose interests related to the themes. Curriculum content areas as well as basic skills are taught within this framework. All the teachers at Gail's school have decided to develop a theme-based curriculum, and they are now examining the state's list of essential skills and the district curriculum to decide which themes seem most appropriate for integrating the content and skills at each grade level.

Challenging Learning Activities and Experiences

The classroom environment should provide opportunities for children to engage in critical thinking, problem solving, and learning based on their individual skills and abilities. The activities and experiences are planned on a continuum so that the teacher considers what might be typical

TABLE 2
The Maker-Schiever Continuum of Problem Types

Type	*Problem*		*Method*		*Solution*	
	Presenter	*Solver*	*Presenter*	*Solver*	*Presenter*	*Solver*
I	K	K	K	K	K	U
II	K	K	K	U	K	U
III	K	K	R	U	R	U
IV	K	K	U	U	U	U
V	U	U	U	U	U	U

K = Known U = Unknown R = Range

Type I problems are highly structured. The problem is presented clearly, a standard method of solution is known by the solver, and a correct solution is known to the presenter.

Type II problems are those in which the problem is presented clearly, but no standard method of solution is known to the solver (although known to others). The solver must rely on his or her reasoning to develop a method and apply this method until the solution known to others is reached.

Type III problems are presented clearly, but a range of methods and a range of solutions are known to the presenter. The problem solver must select a method and reach an acceptable solution.

Type IV problems are presented clearly to the solver, but he or she must develop an appropriate method and apply it until a solution acceptable to him or her is reached. Since no known (or generally acceptable) solution exists, the problem solver also must rely on his or her own reasoning to determine when the best solution has been reached.

Type V problems are "fuzzy" or real-world situations. The solver must first identify and structure a problem before she or he can determine an appropriate method and apply it to reach the best solution.

Source: Schiever, S. W., & Maker, C. J. (1990). Enrichment and acceleration: An overview and new directions. In N. Colangelo & G. Davis (Eds.), *Handbook of gifted education*. Boston: Allyn and Bacon.

for a child at 6 years of age and what a gifted or talented 6 year old might be doing in a particular area. For example, the children in a kindergarten or first grade class may study shapes for a couple of weeks. The typical study of this subject may involve circles, squares, and rectangles, and the activity may be limited to a ditto sheet. In a classroom supportive of creating challenging learning opportunities, however, children may have constructed shapes out of a variety of materials; identified the characteristics of shapes; recognized items in the environment that represent different shapes; written about and charted information about shapes; and developed patterns of shapes using a variety of materials such as paper, fabric, or wood. In this classroom the study of shapes would not be limited to circles, squares, and rectangles, but would include other geometric shapes. The learner may have the opportunity to explore the concepts of lines and planes and create models as well as explore other options based on his or her own experiences.

As a way to integrate curriculum from all content areas and provide challenging learning experiences and activities, many teachers have begun to use a problem continuum developed by Schiever and Maker (1990) (Table 2) along with a matrix developed for the DISCOVER[4] projects (Maker, Nielson, & Rogers, 1994). Using this matrix, teachers design problem-solving experiences that can be presented as choices in learning centers, optional small-group activities, or experiences required for the whole group. An essential ingredient is the design of problem-solving expe-

riences at various levels of complexity with differing degrees of structure to accommodate varied needs and abilities of students.

In addition to the problem-solving matrix, the seven intelligences in Gardner's (1983) theory have been combined with the problem types developed by Schiever and Maker (1990) (see Table 3). The seven intelligences of Gardner are included to assist the teacher in designing learning experiences for students with differing strengths, and to help teachers broaden their view of intelligence to include varied domains. The problem continuum helps teachers design experiences with varied degrees of structure, thereby enabling their students to solve increasingly open-ended problems that resemble more closely the real-life experiences they encounter outside the classroom. Gardner's theory was presented earlier in this book and has been used throughout as a framework for viewing individual differences in children's abilities. However, the problem continuum (Table 2) needs more explanation. Understanding of this continuum may be facilitated by referring to the matrix shown in Table 3. This matrix deals with the abstract idea of cycles using two different topics. Michael Griffin, a second grade teacher in a regular classroom setting, designed and implemented this matrix for the theme of Cycles.

In the matrix, five types of problems are recognized, based on the degree of structure in the problem, method, and solution. For instance, a Type I problem is one in which the problem is clearly and specifically presented, the method is known or clear to the person solving it, and the solution is known to the presenters. The problem solver's task is to find or create the correct solution. For example, "Select words that pertain to the seasons and weather cycles" is a linguistic problem in Table 3. A Type II problem is one in which both the method and the solution must be found or created, while the problem is again stated clearly. For example, "Create a poster showing the seasons and their usual weather in the correct order" is a spatial problem listed in Table 3.

A Type III problem is clearly stated but may be solved in several ways, and it has several possible solutions rather than only one correct method and one correct solution. In Table 3, an example of a Type III problem in bodily-kinesthetic intelligence is to "Pantomime a scene depicting a season or weather cycle." A Type IV problem is again clearly stated, but it has unlimited solutions and methods that would be appropriate. The presenter of the problem does not have in mind a best or most appropriate type of method or solution. The problem solver (student) is free to decide on the criteria by which he or she will judge the solution or the appropriateness of the method. An example of a Type IV problem from Table 3 is "Create a game about the cycle of your choice. Teach your game to a group of younger students and play your game with them." Interpersonal intelligence is the domain of focus in this experience.

Finally, a Type V problem is actually a situation in which the problem must be identified or defined before a method and solution can be devised. In this situation, the problem solver (the learner) has ownership of the problem since the challenge is one he or she views as important or interesting to solve. An example of a Type V problem in music from Table 3 is "Using anything from the music center, create a musical product to convey desert moods." The ultimate or most open-ended Type V problem is completely without structure: it might consist of giving students time to explore freely in centers in which rich, highly varied materials about cycles are available; or it may consist of posing a challenge such as "Show what you know about cycles using any of the materials or people in this classroom."

The problem types in the matrix are viewed by their developers as ranges on a continuum and are not necessarily discrete types. In other words, the line between the types is not always clear, and ranges of structure are seen even within the types, as the preceding examples of Type V problems demonstrate. However, the differences between a Type I and a Type V problem are definite.

An important aspect of the teacher's implementation of the problem matrix is to realize that although we may have designed a Type I problem, a child may not know the method or may interpret the problem differently and may change it into a Type V! A child also may believe that a teacher has a "right" answer in mind when a Type V problem is presented and may search for the "right" answer to the problem he or she believes the teacher wants solved. On the other hand, a teacher can change a Type V to a Type I or Type II by being unwilling to accept the child's choice of problem, method, or solution.

Finally, these problem types should not be viewed as activities that are to be presented sequentially or as activities in which everyone must participate. A Type I problem may be appropriate to solve at any time and should not be seen as a prerequisite to solving Type V problems. As authors, we would be horrified if we learned that any of the readers of this book required all their

TABLE 3
Problem-Type Matrix on Cycles (Seasons and Weather)

	TYPE I	*TYPE II*	*TYPE III*	*TYPE IV*	*TYPE V*
LINGUISTIC	Select words that pertain to the seasons and weather cycles.	Choose a book or cassette tape about 1 of the following cycles: seasons, weather, water, etc. Read or listen to your selection and list at least 10 words describing that cycle.	Create a word worth chart* containing words related to or describing a specific cycle we have been studying.	Create a story, poem, or puppet show about a cycle we have been studying.	Using words, create a literary product about a cycle of your choice.
LOGICAL-MATHEMATICAL	Find the current temperature in the classroom and outside. Keep temperature records for a week.	Create a graph showing the temperature in the classroom and outside for that week.	Using the almanac, find the temperature of five different geographic locations in spring, summer, winter, and fall.	Formulate a hypothesis about temperatures in different places in your school. Set up an experiment to collect data for a week. Show your results in tables or graphs.	Using anything from the math center, create your own experiment to test a hypothesis about a weather phenomenon.
SPATIAL	Study the picture of the cottonwood tree posted in the center. Make an illustration that shows how this tree would look at this time of the year.	Create a poster showing the seasons and their usual weather in the correct order.	Create a painting of one of the cycles we are currently studying.	Create a 3-D model of life in one of the seasons.	You have been asked to design a cover for a book about seasons. What will you do? Show your final product.
MUSICAL	Sing the song "The Cycle of Seasons" for one of your classmates.	Listen to the tape of the thunderstorm. Rewind the tape and listen again, this time clapping the rhythm of the rain.	Create a variation of the music to "The Cycle of Seasons."	Think about a cycle we have been studying and create a song (with or without words) to represent that cycle.	Using anything from the music center, create a musical product related to seasons or weather cycles.
BODILY-KINESTHETIC	Use your body to represent a tree in a gentle breeze, a gust of wind, a severe windstorm, and a tornado.	Using your body, act out a hiker on the path during a hot day, a snowstorm, a hailstorm, and a gentle breeze.	Pantomime a scene depicting a season or weather cycle.	Create a skit, dance, or pantomime showing different stages of a cycle.	You have been asked to perform an original bodily-kinesthetic work for a conference of weather specialists. Share your product.

*Information on this activity is available from Project Success (George, 1993).

TABLE 3 (Continued)

	TYPE I	*TYPE II*	*TYPE III*	*TYPE IV*	*TYPE V*
INTERPERSONAL	With your group, list differences between temperatures inside and outside the classroom.	With your group, categorize the list of words provided that describe seasons and weather.	With your group, role play a type of weather phenomenon.	Create a game about the cycle of your choice. Teach your game to a group of younger students and play the game with them.	With your group, develop an interactive product to illustrate a cycle of your choice.
INTRAPERSONAL			Show or tell how you feel about spring, summer, winter, and fall.	Create something to depict your feelings during a particular type of weather.	Think about a cycle that causes a personal emotional response. Show your feelings about it in some way.

Problem-Type Matrix on Cycles (Desert and Bats)

	TYPE I	*TYPE II*	*TYPE III*	*TYPE IV*	*TYPE V*
LINGUISTIC	What is a cycle? Write your definition. Consult a dictionary to check your definition.	List things found in the desert that are related to the weather cycle.	Create a minibook containing facts about the desert and/or bats.	Pretend you are a "desert dweller." Create a story, poem, or audiotape about your life.	Using words in some way, create a literary product about the desert and its cycles.
LOGICAL-MATHEMATICAL	Count the number of bones found in the wing of a bat.	Categorize the pictures of bats into micro and mega groups.	Using the map, place ten different bats of your choice in the areas where they migrate to and from.	Create a graph, chart, web, or diagram to show relationships among 3 or more desert or bat cycles.	Using anything from the math center, create a unique product explaining desert cycles.
SPATIAL	Correctly place the animals in the right picture - day or night.	Draw a picture with colored pencils to show the stages a saguaro goes through during its life.	Create a mega and/or micro bat mask showing its physical characteristics.	Create a 3-D model to represent a desert cycle.	Using anything from the art center, create a visual piece about the desert and its cycles.
MUSICAL	Practice singing one of the songs we have learned about the desert and bats.	Create a rhythm pattern to accompany one of the desert or bat songs.	Create sounds that depict life in the desert.	Create a song about the desert (with or without words).	Using anything from the music center, create a musical product to convey desert moods.

TABLE 3 (Continued)

	TYPE I	*TYPE II*	*TYPE III*	*TYPE IV*	*TYPE V*
BODILY-KINESTHETIC	Use your body to demonstrate wing movements of a bat.	Imitate a bat getting nectar from a saguaro blossom.	Choose at least 3 different animals from the desert. Role play the ways they move.	Create a dance, pantomime, or other type of movement portraying life in the desert.	Using your body and anything else from the movement center, create a work of art about the desert and its cycles.
INTERPERSONAL	With your group, list or name 20 things found in the desert.	Choose a desert dwelling animal. With your group, discuss what it would be like to be that animal living in the desert during the monsoon season.	With a partner or two, role play animals interacting with each other in the desert.	Interview an adult who has lived in the desert for all or most of his/her life. Talk with them about how desert cycles affect their life.	As a group, use any materials available to create a cooperative product about cycles.
INTRAPERSONAL			Relate, in some way, any feelings you have about the desert, bats, or other living things from the desert.	Relate, in some way, how you would feel if you were alone in the desert.	Using any materials, show, in some way, your personal relationship with the desert.

students to participate in all the activities listed in Table 3, or in all the activities generated from their own problem-solving matrix! We have provided charts that have almost all spaces filled in so that readers have many examples of learning activities with varying degrees of structure.

EXTENSIVE PLANNING

A learner-centered, teacher-facilitated curriculum needs to be planned carefully. This takes time. Managing an environment in which children have choices, have input, and can make decisions about their own learning takes a different kind of skill than having everyone do the same thing every day. To use a learner-centered approach, teachers have to trust children. They must believe that children can make good choices. They also have to trust themselves to believe that they can take their ideas and children's ideas and create learning environments in which children can acquire the basic skills.

Teachers who have always relied upon whole-group instruction often see the kind of teaching described here as impossible to implement and still maintain a balanced life or spend time with their own children. Ruth, Maribel, Gail, and Mindy have been asked this question a number of times, and they all give similar answers. As they changed from a teacher-centered to a learner-centered curriculum, more time was required initially because they were novices at this type of teaching. However, as they became more skilled and gave more responsibilities to the children, they felt they were spending the *same amount* of time planning, but were using that time *differently*.

One very simple change is that rather than spending extensive time doing library and other searches to find appropriate materials for a unit of study, teachers can invite children to make or bring materials that are related to the unit of study. June walked into a classroom recently that had been transformed into a veritable museum with shells, books, nets, photographs, puppets, and other real "ocean" artifacts children had

brought from home to share with their classmates. Mindy asks children to contribute books they have written to the class's library. They are very proud to be able to say that their book is in the class library. Sometimes she arranges to have color copies made so that the students can keep the originals.

In addition to inviting children to share materials, teachers can invite parents and other community members to share information and experiences, and they can encourage children to interview people in their local environments as a way to gather information. The process of locating resources about a unit of study, whether through library searches, discussions, or other retrieval efforts, is an essential part of being a lifelong learner. Involving children in planning and implementing units of study is helpful to both the teacher and the learner.

Intrinsic Motivation

"The motivation for an action comes from within" should be the theme of the classroom. Children have an intrinsic desire to learn and should not be given extrinsic rewards such as stickers and praise for successfully completing tasks or behaving appropriately. Extrinsic motivators such as praise can actually lessen children's self-motivation and cause them to become dependent on rewards (Stringer & Hurt, 1981). When children are given a reward for an activity they are motivated to do, they become less motivated (Leeper & Green, 1995). Instead, children should receive encouragement and assurances. They should be encouraged to evaluate their own behavior and their own work and to begin making personal judgments in the context of the culture and society in which they live. This ultimately will create a society of individuals who are self-motivated and self-disciplined.

Building upon children's intrinsic motivation and their interests is essential. Children's intrinsic motivation *cannot* unfold or be expressed in a classroom in which they are constantly told what to do and how to learn. We know, from watching young children in many types of classrooms, that most will not sit for 40 minutes as Carlos did the first day of kindergarten if they are doing *what the teacher has asked them to do.* Certainly they will not spend an hour and a half, as Carlos did on his block structure the second day of school. Crystal will not spend more than 2 minutes on a group activity organized by the teacher, but she will

spend 2 hours at the computer and will listen to someone read to her (if she chooses the book) for 30 to 40 minutes. Parents report similar experiences with young children.

Teachers often destroy children's natural internal motivation by constantly asking them to stop what they are doing and change to what the teacher has decided they should do right now. Choices, freedom to choose, and flexible timing are essential elements in the unfolding of internal motivation in children.

Self-evaluation also is essential. In Gail's classroom, for instance, students discuss the products they are working on and decide in advance what elements or criteria need to be included in a high-quality product. They engage in constant peer and self-assessment, and frequently even ask visitors to make comments to help them improve their stories or performances. Gail indicates that she believes the children often have higher expectations for their own products than she does. They may see some elements such as "being colorful" as more important than she does. Rather than imposing her standards, however, she simply adds her criteria to those of the group. Seldom, if ever, do the children reject her additions, because they respect her opinion as their teacher.

Supportive Guidance and Discipline

Discipline in the early childhood classroom (birth to third grade) is designed to teach children new ways to interact and handle situations they encounter daily. The teacher creates a humane, active, challenging, flexible, and responsive learn-

ing environment based on the individual needs and abilities of children in the classroom as well as her or his knowledge of children and appropriate practices for young children. When necessary, the teacher sets limits and instructs or directs the children in appropriate ways to interact with children, adults, objects, and materials in the environment. Strategies that can be used to support direct instruction include demonstrating or modeling appropriate behavior, attending to and engaging in sustained interaction with children, giving reasons for requests, listening reflectively, redirecting, and removing children from difficult situations until they feel they are ready to return to the situation.

Teachers need to recognize that the guidance technique used with one child may not work with other children. We know of no "quick fixes" to issues of guidance and discipline. Learning how to interact with other people and materials in one's environment is a lifelong process. Young children are only beginning the journey.

An important component of meeting the guidance and discipline needs of children in an early childhood classroom is understanding children's temperament. Chess and Thomas (1987) classified children's temperament into three basic categories: difficult, easy, and slow to warm up. The difficult child is irregular in biological functioning, adapts slowly to change, and displays a negative mood. On the other hand, the easy child is regular in biological functioning, willing to approach new experiences, adaptable to change, and positive. The slow-to-warm-up child is somewhere in between and is low in activity level, adaptability, and intensity. Difficult children are probably the most challenging for the classroom teacher, because they are usually negotiators, strong-willed, persistent, competitive, easily frustrated, impatient, energetic, and curious. These children need teachers who can offer them flexibility, choice, consistency, limits, and logical consequences. Understanding the child's temperament may help the teacher prepare an environment for the child in which all abilities and needs are considered (Golant & Corwin, 1995; Greenspan, 1995).

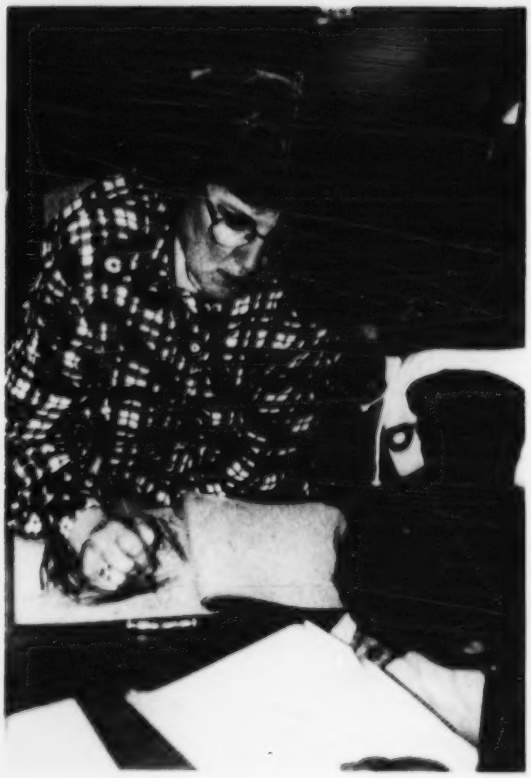
Using Chess's and Thomas's classification, Crystal probably would be considered difficult in temperament. Although her mood is not negative, she certainly is strong-willed, persistent, competitive, impatient, energetic, and curious. Her development is highly uneven. Yet, her teachers have developed effective disciplinary procedures that are implemented in a firm, but kind manner. Crystal may leave the group during activities that do not interest her, but she may not disrupt the group. She may not do anything that will harm others or herself. These general guidelines are explained to Crystal, as are the reasons for any disciplinary measures taken.

Leanderson would be considered an easy child. He is so attentive to other people and to important principles of fairness and kindness that he is flexible, adaptable, and eternally positive. His sense of humor is not disruptive, so it tends to engender cohesiveness rather than conflict. Teachers must be careful, however, not to take advantage of the adaptability of children like Leanderson as they make accommodations for the more difficult children.

Authentic Assessment

Authentic assessment is a way of looking at children that takes into account their unique, individual patterns of growth and development as they relate to universal patterns. The goal of assessment is to help individual children grow and learn. Pett (1990) characterized authentic assessment as performance based, realistic, and instructionally appropriate. Acceptable techniques for authentic assessment are observations, anecdotal records, checklists, portfolios (Nall, 1996) and play-based assessments.

In Ruth's and Maribel's classroom, observation and anecdotal records are used on a daily basis to learn more about the children; they use this information to change learning centers, activities, or other aspects of instruction to meet the needs of the children. Earlier, we described their system of using adhesive pads. They also use checklists and sometimes designate a period of time to observe all children closely. For example, for several days, the two teachers and all observers who visited the classroom cooperated to complete checklists of physical skills. We watched to see which children could hop, skip, jump on one foot, dribble a ball, ride a tricycle, or catch a ball and observed how far they could jump, walk on a balance beam, or throw a ball. Children who needed more practice to learn a certain skill were included in group or individual activities on the playground. Students who were more advanced in skill development were encouraged to participate in more challenging activities. Like Gail and Mindy, Ruth and Maribel keep portfolios of the children's work, both as examples to show parents and as pre- and postassessments to evaluate skill development.



One very simple aspect of Ruth's and Maribel's portfolio assessment process is to keep the journals students have written at the beginning of the year and those written at the end of the year. These journals are made out of large newsprint folded once, with several sheets and a construction paper cover stapled together. The children draw pictures and tell about them. At the beginning of the year, as the children dictate their stories the teachers write their exact language on or near the page with the picture. By the end of the year, most children are writing their own stories using invented spelling. Recording the children's exact language is important, because it allows a realistic assessment of each child's growth in the use of appropriate syntax and vocabulary. Analysis of the children's drawings provides another view of their progress.

Photographs, audiotapes, and videotapes are important aids in the assessment process. Every classroom should have a camera and a tape recorder, with easy access to video recorders for multidimensional, multifaceted assessment. These assessments would be pointless, however, if they were not used to inform teachers and parents about children's development or if that information were not used to make changes in the environment or the content to be learned. Appropriate assessment is the key to accommodating individual needs. Suppose that a teacher has learned through listening to an audiotape of Crystal's conversation with another child that Crystal can count by 5s and that she understands the concepts of addition and subtraction. With this knowledge, should the teacher require Crystal to join the group for an explanation of addition, or should she show Crystal how to use some simple addition and subtraction software and allow her to progress on her own?

Many of the children described in this book also have participated in a more formal, play-based assessment designed as a part of the DISCOVER Project (Maker, Nielson, & Rogers, 1994). Space does not permit a complete description of these assessments, but information can be obtained from the following publications: Maker, 1992; Maker, 1993; Maker, 1996.[5] The DISCOVER assessment is based on Gardner's (1983) theory

and Maker's (1993) belief that a key component in giftedness is the ability to solve complex problems. Assessments occur in the familiar classroom environment using materials that are versatile, engaging, and fun. These assessments are being refined and validated both as ways to identify giftedness and as ways to determine the problem-solving strengths of all children.

Community-Based Programs

Children need to have real experiences with people and materials outside the classroom so that the community becomes an extension of the school. Connections between the classroom and the community in which the child lives allow children to develop an understanding of the larger world around them. The connections can be made by taking children on trips throughout the community. Walks in the neighborhood and trips to a museum, concert hall, supermarket, hardware store, construction site, hospital, fire department, aquarium, nature preserve, picnic area, parent's workplace, or senior citizen's village are just a few examples. These experiences enable children to apply information acquired in the classroom.

Parent Involvement

Linkages between the home and school are important to the teaching and learning process for all children. All children and families, regardless of socioeconomic class and ethnic or cultural background, need connections between the school and home. We need to build partnerships and exchange information frequently. Parents must be encouraged to take an active role in the child's education and be active participants in decisions about the child's learning. Parents need to have open access to school and be encouraged to visit whenever they wish. Inviting parents as special guests who demonstrate their talents or encouraging them to volunteer are two ways to encourage involvement. Most parents want to be involved. Some may have had negative experiences with school, or they may feel reluctant to discuss their child's progress because of limited skill in the English language. Some may feel they know too little about education to be involved. Thus, the teacher may need to encourage parents or make them feel comfortable at school. Home visits and parent-teacher conferences can be important tools for building these positive relationships.

Recognizing the socialization patterns of the child's home and using that knowledge as a bridge to school are fundamental to meeting the child's needs at school. Children are socialized first in the home. At home, they learn how to act, how to treat others, how to function in social situations, and how to learn about the world. Parents are children's first teachers. Issues of discipline, morality, and values are first learned at home. Even when the home patterns are different from the school's they must be acknowledged and respected, because children are a reflection of their home. To deny their socialization patterns is to deny the children.

Collaboration

Collaboration with the local community, including resource people, organizations, and agencies, is important. The community is a valuable asset in providing opportunities and assistance to children and families. Keeping a list of

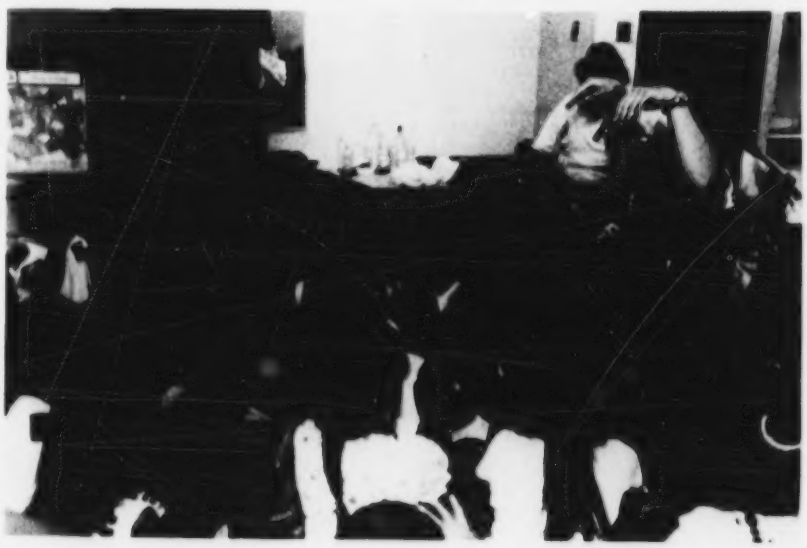
individuals within the community who could serve as mentors or assist in classrooms with special projects is helpful.

Working with local agencies such as children's services, departments of human services, and health and mental health organizations also gives teachers the resources they need to help children and families gain assistance when it is required.

Collaboration is a key concept in the implementation of these last three principles (authentic assesssment, community-based programs, and parent involvement). Parents and the community must be viewed as equal partners in the learning process. Mutual respect and a free flow of information are essential ingredients in the development of collaborative efforts.

One important connection that can be made is with the diverse cultures, languages, and environments that make up a particular community. Teachers can build respect for this diversity in the classroom by bringing the community into the classroom and taking the children out into the community. Building upon the children's natural curiosity and interest in people, the teachers in the three classrooms described in this book have implemented many activities involving community collaborations. The following are a few examples:

- An artist showed slides of his work and demonstrated how he creates a painting.
- A mother taught the class a song in her native language.
- A father brought his collection of banks to show the children.
- Children, parents, and teachers gathered for an exploration of their multiple intelligences through games and learning centers.
- Learning activity packets in bags are checked out by parents and children.



- An older brother played guitar and sang for the children.
- An older sister came to the class to teach the children line dances.
- A teacher shared her knowledge of piñata making.
- A teacher demonstrated how adobe blocks are made.
- A mother brought Japanese food and chopsticks for the children's snack time and taught them songs in Japanese.
- The children learned from two parents how to make fry bread.
- A grandmother brought her rugs and showed the children how to weave.

Epilogue

Putting It All Together

In this book, we have shared our own stories and the stories of teachers and children we know. We also have explained the principles of developmentally appropriate practices from our own perspectives and have shown how they can be integrated with important principles for teaching gifted children. We recognize that every community and every classroom is unique, as are the teachers and learners in those communities and classrooms. How each individual teacher provides for the development of young gifted children is personal and dynamic. However, we believe that the principles of developmentally appropriate practice as presented and explained in this book are common elements that must be included in an environment in which children's abilities can unfold and grow.

Endnotes

1. Many of the children in this classroom are dominant Spanish speakers, and many are fluent in both English and Spanish. Some speak only English. All receive language arts instruction in their dominant language.
2. Information about Project Success Enrichment can be obtained from its developer, Carolyn Bronson, P.O. Box 22447, Seattle, WA, 98122.
3. Information about this series of videotapes and teaching materials can be obtained from the author, Richard Shope, at MimeMedia, P.O. Box 4225, Whittier, CA, 20607–4225.
4. DISCOVER (Discovering Intellectual Strengths and Capabilities while Observing Varied Ethnic Responses) is funded through grants from the Office of Bilingual Education and Minority Languages Affairs (Grant #T003L30034) and the Javits Gifted and Talented Students Education Program (Grant #R206A30138).
5. Information also can be obtained by writing to C. June Maker, Department of Special Education and Rehabilitation, The University of Arizona, Tucson, AZ, 85721.

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APPENDIX A

Participants in the Symposium

August 11–13, 1995

Betty Blanton-Oliver
Instructional Consultant for Gifted Education
Chesterfield County Public Schools
Richmond, VA

Rosemarie Bellace
Supervisor of Learning
Colonial School District
Division of Learning
New Castle, DE

Melinda Bendy
Instructional Support Team Member
Prince William County Public Schools
Manassas, VA

Sonja Charlie
Kindergarten Teacher
Rock Point Community School
Rock Point, AZ

Maura Fox Collier
Parent
Harrington Park, NJ

Connie Coulianos
Hollingworth Preschool
Columbia University
New York, NY

Linda Frederick
Parent
Member, Board of Directors
CEC—Division for Early Childhood (DEC)
Denver, CO

Nancy B. Hamant
Educational Consultant Services
for Gifted Children
Division of Special Education
Ohio Dept. of Education
Worthington, OH

Dr. Joanne Haroutounian
Developer of MusicLink
Music Faculty
George Mason University
Fairfax, VA

Candice Hopkins
1995 Delaware Teacher of the Year
Colonial School District
Pleasantville Elementary School
New Castle, DE

Kurt Hulett
Student, James Madison University
Harrisonburg, VA

Harriet D. Kaplan
Director
Peabody School for
Intellectually Advanced Children
Charlottesville, VA

Heather Kessler
Primary Teacher
Alvaton Elementary School
Alvaton, Kentucky

Dr. Margaret King
Professor of Early Childhood Education
Ohio University
Athens, OH

Dr. C. June Maker
Professor
Department of Special Education and
Rehabilitation
The University of Arizona
Tucson, AZ

Margaret Manning
Gifted Education Facilitator
Missoula County Public Schools
Missoula, MT

Deborah Reidy
Third Grade Teacher
Sycamore School for the Academically Gifted
Indianapolis, IN

Mary Shearer
Winsor Park School
Edmonton, Alberta Canada

Dr. Linda Sheffield
National Council of Teachers of Mathematics
School of Education
Northern Kentucky University
Highland Heights, KY

Dr. Emily Stewart
President Elect
CEC—The Association for the Gifted (TAG)
Supervisor of G/T and Schoolwide Enrichment
Harford County Public Schools
Bel Air, MD

Rick Strot
Clinical Professor
Baylor University
Hillcrest Professional Development School
Waco, TX

Dr. Martha J. Tompkins
Administrative Assistant
Old Donation Center for The G/T
Virginia Beach, VA

Jerrie Ueberle
President
Global Interactions, Inc.
Phoenix, AZ

Dr. Ikechukwu C. Ukeje
Assistant Professor of Pediatrics
Institute for the Study of Child Development
Robert Wood Johnson Medical School
University of Medicine & Dentistry of New Jersey
New Brunswick, NJ

Students Featured in the Video

Yoko Sakata (violinist)
Ernesto Joemariea Ganuelas (pianist)
William Cang
Mathew Horne
Jonathan Yu
Rachel Griendling
Dean Smollar
Jacob Oppenheim
Michelle Lee

APPENDIX B

Curriculum for Nurturing Giftedness in Young Children

Video Script

Following is a transcript of the closed captioned video script. The name of the person speaking is in brackets directly preceding his or her remark. The bulleted items on pages 50–51 and 53 appear in the video and are reproduced here to assist those who want to give these items additional thought and special attention.

* * *

[Narrator]

An incredible performance. Yoko's only 8 years old, but she's already playing the violin with a skill and sophistication that few adults can match.

[Narrator]

Needless to say, her parents recognized her musical talents when she was a toddler, and for the past five years, she's had the advantage of the best musical instruction available. You can see the results.

Funny, isn't it? Where musical talent is concerned, most people agree that gifted children should receive special attention and tons of encouragement. Yet when younger students are gifted or creative in other areas—science, language, mathematics—their special aptitudes are often ignored. E. J. has been playing the piano for only 18 months. His passion for the instrument, combined with hard work, innate ability, and quality instruction, have made it possible for him to learn the piano at an accelerated rate and to an unusually high level. But what happens to children who, at the same age, are fascinated with mathematical applications and computers? Families with resources can often find private opportunities where children can maximize potential, while families with limited resources may not be able to provide special learning opportunities for their children. So what can be done to encourage and nurture giftedness in young children? At a recent symposium in the nation's capital, educators met to discuss this problem and the larger educational questions it raises.

How do we recognize potential giftedness in young children?

[C. June Maker]

I believe that gifted people are problem-solvers, and that's based on some research on handicapped people

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who are successful. We found that a major characteristic was their ability to solve complex problems.

[Rick Strot]

All of us as human beings solve problems. We do it every day. But gifted children in particular seem to have skills and adeptness for doing this.

[Melinda Bendy]

Students that have some giftedness in a particular area, they don't want to just know the facts and the information, because quite often, they already know a lot about the facts. They don't want to just know how a piano works, for example. They want to play the piano, they want to experiment with the piano, they want to find out how much they're able to do with the piano. They don't want to just learn the scientific process, they want to be scientists. They want to be mathematicians. So they really want to be involved, because they can find some connection to the real world. They don't want to just know the information. It's kind of, "What can it do for me?" Or "What can I do with this particular area?"

[Connie Coulianos]

One particularly bright child took advantage of our study of dinosaurs to build a model of a tyrannosaurus rex. It wasn't good enough to look up pictures in a magazine. It wasn't good enough to have rubber dinosaurs in the classroom. He wanted to produce a tyrannosaurus rex.

[Deborah Reidy]

One characteristic of gifted children, I think, is that they can take abstract things and apply them to everyday situations. They're able to take little bits and pieces of things and connect them in many, many different ways.

[Betty Blanton-Oliver]

One of the characteristics in young children that usually stands out is they have a tremendous ability to understand concepts that are way beyond their years. Not only do they understand concepts, but they often can sit and think about that concept and then pull together something they learned in the past and come up with a new idea.

[Connie Coulianos]

My experience in working with very young children is that it's more appropriate to refer to them as developmentally precocious. These are children who are doing the kinds of things that all children will ultimately be able to do, but they're just doing it much earlier.

[Maura Collier]

For example, I came home from the supermarket, and he was doing a spreadsheet. Now, for a 16-year-old, that might not be unusual, but for an 8-year-old to be sitting at a computer, doing a spreadsheet, self-initiated, was something else.

[Nancy Hamant]

One characteristic of a gifted child is their intense pleasure in learning, to the degree that they can tune out. They have a tenacity for that learning. They can tune out the real world around them, and sometimes that's very hard for a parent or a teacher to deal with. It seems like the child isn't listening, isn't following through. But they attack their learning with such intensity and desire that nothing else is important.

[Mary Shearer]

Gifted students can really stay focused on what they're doing.

[Linda Frederick]

Giftedness can also be characterized as a craving and a desire and all-consuming interest that a child has in any subject.

[Maura Collier]

One of the first signs that I had that Chris was gifted was his ability to grasp certain concepts and take them and apply them in all different related fields—even unrelated incidents. His memory is another thing. He can go back and remember something and then apply it to a new situation. He has interests that children his age usually don't share.

[Margaret King]

Each child has a specific make-up. Their temperament, their coping patterns, their behaviors, their interests are even different among gifted children. So the point is that we must look at each child as an individual in the classroom and plan curriculum according to those individual needs or those individual patterns.

[Harriet Kaplan]

One of the things that I think is most outstanding about gifted children is their ability to think about their own thinking.

[Linda Frederick]

I would like the emphasis to change from teaching gifted children to nurturing giftedness in children.

[No speaker]

How do we recognize potential giftedness in young children?

- Solve complex problems
- Go beyond the facts
- Apply abstract ideas
- Analyze and synthesize

- Developmentally precocious
- Tenacious in areas of interest
- Different interests
- Metacognitive

Are teachers prepared for this challenge?

[Candice Hopkins]

As a classroom teacher, I've felt the challenge of not being able to meet those special-need children in my classroom.

[Kurt Hulett]

I have two more academic courses, and to this point, nothing has really been brought up about curriculum. Some, but I do feel ill-prepared going into the field and going into student teaching.

[Rosemarie Bellace]

That teacher is the person who perhaps opens a door or gives an instance or allows for an opportunity to unfold where a talent, a thought, an interest, a desire can be pursued by that child in a secure environment.

[Mary Shearer]

They really are wonderful, wonderful teachers, who I believe are professionals. They need to learn to believe in themselves and trust their own judgment in what they're doing.

[Rick Strot]

What we need is partnerships where university faculty are in the schools rather than being apart from them.

How can curriculum be used to nurture giftedness?

[Rick Strot]

How do we teach or guide children to become more effective problem solvers? By giving them problems that are meaningful, that are connected to real life, that are playful in nature for young children.

[Linda Frederick]

I think we need to be more creative with the kinds of education that we're offering children now instead of less creative.

[Joanne Haroutounian]

I'm a firm believer that artistic thinking should be developed along with academic or cognitive thinking.

[Connie Coulianos]

The kind of curriculum that responds best to their needs is curriculum that goes both in-depth and is broad-based enough that we have a number of different ways of connecting with the topic. Such things as a unit that grew out of our direct question to the children "What would you like to study?"

[Student]

Poetry, because I really like the poems that Ms. Baxter gives out, and I like reading poems. And she makes us act them out, and we write poems a lot.

[Student]

Like what's the capital of like Liberia or something like that.

[Student]

Also, I enjoy math.

[Connie Coulianos]

This after they had already become familiar with the concept of study, and using music as a pivot, we used the music of Gustav Holst to move from the Roman mythology, where all of our terminology is taken from, into the more technical exploration of space.

[Martha Tompkins]

Curriculum is pretty much theme-based, interdisciplinary, and in the coming future, it will have a high technology focus.

[Ikechukwu C. Ukeje]

I also feel programs need to be open-ended for gifted kids, because of their ability to learn very rapidly and their quest for information and depth.

[Margaret King]

We need to know what children at a certain age are interested in. For example, many children who are 3, 4, and 5 years of age are interested in dinosaurs. Gifted children are also interested in dinosaurs. The difference is that they might be more into classifying dinosaurs. They might be more into writing stories about dinosaurs. They might be more into labeling dinosaurs and doing those kinds of things.

[Heather Kessler]

I want to provide plenty of open-ended activities, which would be for all the children, but with the open-ended activities, that would allow my gifted children basically to go further with it and to individualize activities they may be doing, whereas they can kind of choose the level they want to work on.

[Connie Coulianos]

They want to have something to show for what they're studying. And we try to . . . . Even when I begin to think about a unit with children, I try to think of who is going to be our audience for the products the children come up with? So Earth Day is one of our annual celebrations where we really try to give the children an opportunity

to share what they know and what they've produced with the larger Teacher's College community.

[Rick Strot]

Our task as teachers of children with exceptional abilities is to find activities—in this case, problem-solving activities that are meaningful, that are real, that the children can get actively engaged in. And in the end, they'll be learning something that's a life-long skill.

[Harriet Kaplan]

You want to ask the gifted kids to justify every single aspect of the project that they've done. The reason that you want them to do this is because if they have to justify what they're doing, it makes them think about what they're doing and they can answer the question themselves: "Does this make sense in the context of the project?"

[Rick Strot]

Not only that, but they begin to see the power that they have to change things around them.

What specific curriculum objectives might be useful?

[Margaret King]

Young children are interested in the world around them, so there might be things in the environment, like bugs or animals, which would really pique young children's interest. Again, with young gifted children, they might be more interested in labeling the bugs. They might be more interested in the habitat of the bugs. They might be more interested in finding similarities between different kinds of bugs and what family the bugs belong to. They might even look at differences between, for example, bugs and spiders.

[Martha Tompkins]

One of the things that I do is to have a community problem-solving unit where the students focus on a particular community problem. One of the ones that we focused on recently was one having to do with water conservation. One of the outgrowths of the water conservation curriculum was that the students had to produce a water conservation booklet that was actually used to teach other students about water conservation.

[Voice of C. June Maker]

If we don't provide opportunities, then the child can't know what they're good at and we can't see what they're motivated to do.

[Student]

I like how Ms. Baxter makes it so fun to do, and she helps. And she gives us questions every weekend to do, and I think I learn more in social studies than I do in any other subject.

My favorite thing about this class is that we can always get some good help whenever we need some. Like if we're having trouble on this one problem and Ms. Baxter can't help anybody because she's working with somebody, then you'd always have somebody that would be willing to help you.

[Student]

The most exciting thing that I did this third-grade year was the poetry, because we got to make poems and we got to act some of them out in front of the class.

[Student]

My favorite thing in school is math and Challenge Math. Challenge Math is cool because it's challenging, and you get to use some neat stuff.

[Voice of Linda Sheffield]

They need the opportunities to really practice good mathematics, the opportunities to answer decent problems.

[Voice of classroom teacher]

Are these going to be equal or not equal? Give me a prediction on that. Are these going to be equal chances of it happening?

[Harriet Kaplan]

We had some children who were so enthralled with this project that you couldn't stop them if you wanted to.

[Sonja Charlie]

And we see those as their strengths. And this program is developed so that we can enhance those strengths and also encourage those that they might be a little bit weaker in. So, the activities in these different learning centers can be used for all students. Having the learning centers, I think, gives the teacher the time to go and do one-to-one with those who are gifted.

[Voice of classroom teacher]

You think so? You're absolutely right!

[C. June Maker]

To see the kids watch the visual artist demonstrating his work is really fascinating. They work with the teachers and with the kids, because we believe that that contact is really important.

The last thing I want to say, and it's by no means the least—I've talked about it and integrated it, but I want to just say it. And that is the integration of the child's culture—the culture of all of the children in the group and the culture of each particular child. That means their language, bilingual education programs. It also

means taking them into the community to watch the piñata maker, as well as to go take them to see engineering and those sorts of things.

[Connie Coulianos]

One of my favorite examples is . . . we were studying Antarctica, and in Antarctica, there are seven different types of penguins. So the children knew a great deal about penguins, and one children brought in the "Columbia" magazine, in which a photograph of a penguin was misidentified in an article by an eminent scholar. So he brought this in. He said, "They say this is a Gentoo penguin, and it's an Adelie. What are we going to do?" So we wrote a letter to the editor and sent along a picture of what they had said was a Gentoo penguin. They called us and invited us to their offices. The children went down, and in a couple of months, they printed the letter that we sent along with the correction and a note from Dr. Salvadori acknowledging the mistake and thanking the children for their careful attention to his work.

[Rick Strot]

Usually, we don't help children become aware of how to solve the problems in the world around them. I like to, in our school, always look for messes. There's something that we want to do or something that's not working right, and get the children involved in solving it. It may be as simple as . . . there's only one water fountain in the room, and when we go to drink water, it takes too long and nobody ever gets enough water. Everybody's always thirsty because you never have enough time to drink as much as you want. That's a mess. One of the things I do with children is I use a method of creative problem solving, and I like to use this process in simulations. I'll set up a simulation. For example, if the theme is structures, one of the simulations I do with young children is we're going to build a city. We're going to have look at where we want to put the city, so we're going to get into science and the influence of the natural environment on where the city's going to go. We're going to get into economic structures that we might have for our new city. We're going to get into political structures.

[No speaker]

How can curriculum be used to nurture giftedness?

- Meaningful problems
- Creative thinking
- Incorporate the arts
- Depth and breadth
- Theme-based, interdisciplinary
- High technology focus
- Open-endedness
- Higher order thinking
- Based on student interests
- Individualize/ student choice
- Real world audiences
- Problem solving activities
- Documentation
- Empowering
- Increased complexity and challenge
- Exploratory opportunities
- Enhance strengths
- Cultural relevance

What conclusions can be reached?

[C. June Maker]

Early identification of gifted children, I believe, does very much help the community from which that child comes.

[Margaret Manning]

Perhaps the switch that we need to make is to also view highly capable people and children as also people who are very much at risk.

[Heather Kessler]

I think you have to provide a wide variety of opportunities to nurture giftedness. One example—I had a child in my classroom who is very behind his grade level in reading and language arts, and I gave them an activity dealing with origami and spatial relationships, and he was able to complete that task successfully, be the first person done, and all the other children in the classroom wanted help from him.

[Emily Stewart]

We used to think about a gifted *child* (emphasis added). I think, more and more, we're thinking about the developing of a gift or a talent being a process or a path that goes on over a period of time and really has recognizable stages, recognizable phases. So we're really moving from thinking about the characteristics of giftedness to the developmental potential that young children have and the path that they follow in order to develop that.

[Rick Strot]

One of the barriers to implementing quality nurturing of gifted children at the primary level in early childhood is lack of training, and in particular, the lack of

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partnerships between universities, who are traditionally the people who train teachers in gifted, and the schools in which we're dealing with gifted children. So that what we need is partnerships, where university faculty are in the schools rather than being apart from them, and are in there working alongside teachers—as mentors, as learners, as part of a cooperative community of learners who are dealing with the young gifted child and dealing with issues of how to differentiate your curriculum to provide the best educational opportunity possible.

APPENDIX C

DISCOVER III Project Abstract

Dr. C. June Maker
Dr. Judith Rogers
Marco A. Ruiz

Need for the Project

The ethnic diversity of Arizona and the United States is not reflected in programs for gifted students despite efforts to achieve equity. This problem has three causes: (1) Students from some cultural and linguistic backgrounds do not score well on tests used as the major criterion for placement in special programs; (2) the success of alternative identification processes often is not assessed on a long-term basis, or it is judged by how well alternatives correlate with IQ test scores; and (3) many culturally and linguistically diverse students placed in special programs are mistaught, become frustrated, and drop out of programs designed for students with different experiences, linguistic skills, and cultural values. Underlying problems are overreliance on psychometric definitions of giftedness, negative expectations, and inappropriate stereotypes of the abilities of students from diverse cultural and linguistic backgrounds.

Based on several years of research on problem solving in gifted people from special populations, the project director has developed and pilot tested a new way to identify giftedness in grades K through 3 that is practical and cost effective. Equal percentages of children are identified from different cultural and linguistic groups, and children identified by these methods make tremendous gains when placed in special enrichment programs. The new process needs long-term evaluation, and adaptation for students in grades 4 through 12.

Proposed Plan of Operation

The University of Arizona and nine local education agencies (LEAs) with high percentages of Hispanic, African American, and American Indian (e.g., Navajo, Pascua Yaqui, Tohono O'Odham) children will continue to implement and evaluate these new procedures and extend their use to grades 4 through 12. Using Howard Gardner's theory of multiple intelligences as a framework, special enrichment programs will be developed and provided for students identified by traditional and alternative methods. Project staff will facil-

itate this curriculum development in cooperation with LEA contacts, educators, community members, gifted individuals, and an advisory committee.

Significance/Intended Outcomes

Significant outcomes of the project will be (a) new procedures for identifying gifted children in grades K through 12 with demonstrated reliability and validity for use with diverse ethnic, cultural, and linguistic groups in a variety of settings; (b) curricula designed to develop problem-solving abilities in multicultural, multilingual groups in seven areas of intelligence; (c) a cadre of local community members in eight varied LEAs who can provide education and training for others; and (d) videotapes and other materials for information dissemination and staff development.

APPENDIX D

DISCOVER IV Project Abstract

Dr. C. June Maker
Claudia Clark McArthur

Need for the Project

The ethnic diversity of Arizona and the United States is not reflected in programs for gifted students despite efforts to achieve equity. This problem has three causes: (1) Children from some culturally and linguistically diverse groups do not score well on tests used as the major criterion for placement in special programs; (2) the success of alternative identification processes often is judged by how well they correlate with IQ test scores; and (3) many children from culturally and linguistically diverse backgrounds who are placed in these programs are mistaught, become frustrated, and drop out of programs designed for children with different experiences, linguistic skills, and cultural values. Underlying problems are overreliance on psychometric definitions of giftedness, inadequate language development strategies, negative expectations, and inappropriate stereotypes of the abilities of children from culturally and linguistically diverse backgrounds.

Based on several years of research on problem solving in gifted people from special populations, the DISCOVER project is designed to provide a developmental bilingual enrichment program for preschool children who are potentially gifted or identified as gifted, and who have limited proficiency in English. Children who participate in this program are selected through an innovative process in which trained observers watch and interact with children in the usual context of the classroom. Follow-up will include (a) development of profiles of strengths and weaknesses in seven intelligences, (b) individualized education programs (IEPs), (c) placement in targeted classrooms, (d) monthly parent and child meetings, (e) intensive staff development activities involving their teachers, and (f) comprehensive assessment and documentation of growth using performance-based assessment of what children actually can do in contexts that are instructionally valid.

Proposed Plan of Operation

The University of Arizona and seven local education agencies (LEAs) have developed several cooperative projects to benefit gifted children from culturally and linguistically diverse backgrounds. Preschool programs will be held in at least two sites (serving 3–4 attendance areas), and will be expanded to other sites depending on available local resources. At one site, instruction will be pro-

vided in Navajo and English, and at the other, in Spanish and English. Using Gardner's theory of multiple intelligences as the framework, project personnel, an advisory committee, and local gifted individuals (e.g., artists, musicians, writers) will assist each LEA in the development of culturally relevant curricula to enhance problem-solving abilities in seven intelligences.

Information dissemination will occur during and at the conclusion of the project using various media. Videotapes of the identification process and the curriculum will be aired on local stations and made available to LEAs interested in implementing any aspect of the project. Profiles of children and educational recommendations will be made available to their parents and teachers. Materials and training necessary for implementing the identification process and developing local curricula will be disseminated through professional journals and conferences. Finally, results of the project evaluation will be made available to the funding agency, published in appropriate journals, presented to local school boards, and disseminated to the general public in a variety of media.

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